DRAFT

AIR QUALITY AND LAND USE HANDBOOK: A COMMUNITY HEALTH PERSPECTIVE

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Introduction

The goal of this Handbook is to promote better, more informed decision-making by local land use agencies to improve air quality in their communities. While the State Air Resources Board (ARB/Board) and local air pollution control districts share the overall responsibility for improving statewide air quality, local land use agencies also play an important public health role. The policy, planning, and siting activities of land use agencies can directly affect air quality and public health in local communities.

The idea for this handbook stemmed from the recognition that air pollution controls alone may not always prevent localized adverse health impacts. Land use policies and practices, including general plans, zoning, and project location should complement air quality programs and fill in program gaps that fall within the jurisdiction of land use agencies.

This Handbook has several objectives:

- Identify approaches that land use agencies can use to prevent or reduce potential air pollution impacts associated with new land use development, siting, and permitting;

- Improve and facilitate access to air quality data and evaluation tools for use in the land use decision-making process;

- Encourage stronger collaboration between land use agencies and local air districts to reduce community exposure to source-specific and cumulative air pollution impacts; and

- Emphasize community outreach approaches that promote active public involvement in the air quality/land use decision-making process.

The Handbook builds on upon California's 2003 General Plan Guidelines. These Guidelines, developed by the Governor's Office of Planning and Research (OPR), explain the land use planning process and applicable legal requirements. The handbook also builds upon a 1997 ARB report, "The Land Use-Air Quality Linkage."[1] This Report was an outgrowth of the California Clean Air Act which, among other things, called upon local air pollution control districts to focus particular attention on reducing emissions from sources that indirectly cause air pollution by attracting vehicle trips. Such indirect sources include shopping centers, schools and universities, employment centers, warehousing, airport hubs, medical offices, sports arenas, and other facilities. The Linkage report summarizes available data on the relationships between land use, transportation,

[1] To access this report, please refer to ARB's website or click on: http://www.arb.ca.gov/ch/programs/link97.pdf

and air quality and highlights strategies that can help to reduce the use of single occupancy automobile use. Such strategies complement ARB regulatory programs that continue to reduce motor vehicle emissions.

Regarding land use, the Handbook identifies the types of air quality-related information that land use agencies should consider in the land use decision-making process, including general, regional, and community plans and zoning ordinances, conducting environmental reviews, project siting, and permit issuance. In addition, the Handbook's appendices contain information on approaches and methodologies for evaluating whether a proposed new project may require a special air pollution assessment.

This Handbook focuses on land use decisions related to industrial or commercial sources of air pollution. Air pollution from non-industrial or "mobile" sources (e.g., cars, trucks, trains, construction equipment) that is linked to new projects is also addressed in this Handbook and its Technical Supplements, and the Land Use Air Quality Linkage Report. Mobile sources continue to be the largest overall contributors to the State's air pollution problems, representing the greatest air pollution health risk to most Californians. Based on current health risk information for air toxics, the most serious pollutants on a statewide basis are diesel particulate matter (diesel PM), benzene, and 1,3-butadiene, all of which are primarily emitted by motor vehicles.

Local actions are also needed to ensure these benefits are shared fairly and consistently down to the neighborhood level. At the State level, ARB continues to pursue new strategies to further reduce motor vehicle-related emissions in order to attain air quality standards and reduce air toxics risk. These efforts will reduce emissions, exposure, and risk from the most serious pollutants on a statewide and regional basis.

This Handbook is an informational document and is not mandatory. It describes tools and approaches that can be used to address the potential for new projects to cause localized health risk or contribute to cumulative impacts where air pollution sources are concentrated. Our goal is to strengthen the relationship between air quality and land use agencies to effectively address community-level public health issues throughout California.

In December 2001, the California Air Resources Board (ARB/Board) adopted "Policies and Actions for Environmental Justice". These policies were the product of a nearly two year process led by the ARB, in coordination with a group of interested stakeholders of varied perspectives and insights, representing local land use and air agencies, community interest groups, environmental justice organizations, academia, and business (Environmental Justice Stakeholders Group).

One of the environmental justice policies adopted by the ARB was to "assess, consider, and reduce cumulative emissions, exposure, and health risk when developing and implementing [ARB] programs." Consistent with this policy, the ARB committed to developing technical tools for performing cumulative impact assessments on a neighborhood scale. ARB also committed to working with land use and transportation agencies, and local air districts to develop ways to identify, consider, and reduce public exposure to cumulative air pollution impacts associated with land use planning and decision-making. Developed under the auspices of the Environmental Justice Stakeholders Group, this Handbook is a first step in meeting that commitment.

Handbook Audience

While the primary users of the Handbook will likely be agencies responsible for air quality and land use planning, the ideas and technical issues presented in the Handbook may also be useful for:

- public and community organizations and community residents;
- federal, State and regional agencies that fund, review, regulate, oversee, or otherwise influence environmental policies and programs affected by land use policies; and
- private developers.

Organization of the Handbook

The Handbook is organized into 6 Sections. The Sections lead the reader through a sequence of questions aimed at framing the issue of localized and cumulative air pollution impacts, and identifying the available tools and approaches for addressing these issues. Land use and air quality-based mechanisms are discussed in the context of how they can be applied to assess the potential for new projects to contribute to air pollution impacts at the neighborhood level. One section discusses project categories or siting scenarios that may require special assessments by land use agencies, while other sections describe tools and approaches that can assist these agencies in the decision-making process and reduce the potential for cumulative impacts from new projects. The Handbook also discusses ways that public involvement in the process can be enhanced.

The Handbook contains seven appendices. Appendix A lists land use classifications and associated facility categories that could emit air pollutants. Appendix B poses questions that land use agencies should consider when reviewing new projects for potential air quality impacts. Appendix C contains general air quality information and tools that land use agencies can access for use in assessing air pollution impacts. Appendix D provides background information on the role that land use and air quality agencies play in the land use process. Appendix E describes special evaluation processes that apply to school siting. Appendix F discusses general processes and approaches commonly used by land

use agencies to address air pollution impacts. Appendix G is a glossary of key air pollution terms that are used in the Handbook.

Technical Supplements

The Handbook is intended as a framework for informed decision-making. In addition, ARB, in conjunction with local air districts, is developing supporting technical information. These Technical Supplements will provide reference materials, including assessment tools and information on potential mitigation approaches.

Acknowledgments

The ARB staff would like to acknowledge the exceptional contributions made to this document by the ARB Environmental Justice Stakeholders Group. Since 2001, ARB staff has consistently relied on this group to provide critical and constructive input on implementing the specifics of ARB's environmental justice policies and actions. The Stakeholders Group is convened by the ARB, and comprised of representatives from local land use and air agencies, community interest groups, environmental justice organizations, academia, and business. Their assistance and suggestions throughout the development of the Handbook have been invaluable.

1. What key issues should land use agencies consider to help reduce air pollution in their communities?

California's air pollution control programs have helped to improve air quality and reduce health risk statewide. However, State and federal air quality standards are still exceeded in many areas of California and the statewide health risk posed by toxic air contaminants (air toxics) remains too high. Also, some communities experience higher pollution exposures than others -- making localized impacts, as well regional or statewide impacts, an important consideration.

The Air Resources Board (ARB) and local air pollution control districts (local air districts) have complementary air quality programs to reduce air pollution statewide. Local air districts are primarily responsible for regulating industrial and commercial air pollution sources in their regions. However, local land use agencies can also play an important role in reducing air pollution impacts through policy, planning, and siting activities.

Avoiding incompatible land uses is a key to reducing localized air pollution exposures that can result in adverse health impacts, especially in sensitive individuals. From a public health standpoint, sensitive individuals refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems). Land uses where sensitive individuals are most likely to reside or play include schools and schoolyards, parks and playgrounds, day care centers, nursing homes, hospitals, and residential communities.

Land use decisions that can pose a public health risk are often the result of the proposed location for a new project. Even with the best available control technology, some projects that are sited very close to homes, schools, and other public places can result in air pollution exposures that are too high. The reverse is also true – siting a new school or home too close to an existing source of air pollution can be a problem.

While not the general rule, poor land use policies and practices can generate or worsen air pollution and adversely affect public health by mixing incompatible land uses. Examples include locating housing or schools next to small metal plating facilities that use a highly toxic form of chromium, or near to large industrial facilities or freeways. Based on recent monitoring and health-based studies, we now know that air quality impacts from incompatible land uses can contribute to increased risk of illness, missed work and school, a lower quality of life, and higher costs for public health and pollution control.[2]

[2] For more information, the reader should refer to ARB's website on community health: http://www.arb.ca.gov/ch/ch.htm

An individual siting decision, which results in incompatible land uses, can be of even greater concern when existing air pollution exposures in a community are considered. In general terms, this is often referred to as the issue of "cumulative impacts." ARB is working with air pollution control districts to better define these situations, and to make information about existing air pollution levels (e.g., from local businesses, motor vehicles, and other areawide sources) more readily available to land use agencies.

When siting new projects, local agencies should consider both project-related impacts and the health risk potential for cumulative impacts from existing sources of air pollution in a neighborhood or community.

Air agencies recognize that avoiding incompatible land uses can be a challenge in the context of mixed-use zoning. From a regional air quality standpoint, the concept of mixed-use development has been encouraged as a means to reduce vehicle trips and the associated emissions. However, adequate distance between air pollution sources and other land uses (e.g., homes and schools) is needed to avoid or reduce adverse health impacts. That distance will vary for different projects. Factors to be considered include the nature of the air pollution source, the nearby land uses, and the potential health risk the local policy makers find acceptable.

In the category of indirect emissions, vehicle emissions associated with some categories of land uses can "indirectly" create emissions from increased traffic and motor vehicle related activities. These "indirect sources" include warehouses, truck stops, bus terminals, shopping centers, business parks, etc. In addition to contributing to regional air pollution, there is a potential for localized impacts from vehicle emissions associated with an indirect source. An example is when a community is located close to an indirect source that operates diesel engines on site or attracts diesel-fueled vehicles from nearby transportation corridors. These exposures are of concern because particulate matter from diesel engines has been identified by ARB as a toxic air contaminant and it also contributes to overall particulate matter pollution.

Some of the most common sources of diesel particulate matter (diesel PM) in a community are truck traffic in heavily-traveled transportation corridors, truck idling on site, and emissions from truck-mounted, diesel-powered refrigeration units and portable generators that are frequently located at distribution centers or warehousing facilities. The ARB is developing and adopting a number of measures to reduce diesel particulate emissions from these sources, however, these statewide measures may not address all localized exposures. Mitigation for specific projects may be necessary.

Based on what we know today, the key new project siting issues that land use agencies should consider relative to localized air pollution impacts are: (1) incompatible land uses that place sensitive individuals in close proximity to emission sources, and (2) the potential for cumulative impacts.

1) **Incompatible Land Uses.** Localized air pollution impacts can occur when a polluting source, such as a heavily trafficked roadway, warehousing facilities, industrial or commercial facilities are located near a land use where sensitive individuals are found such as a school, hospital, or homes. Ways to avoid or reduce such impacts could include requiring adequate distance between an air pollution source and sensitive locations, and triggering a process to determine if project design changes or mitigation can be used to reduce or avoid potential impacts.

2) **Cumulative Impacts.** In mixed-use areas, air pollution impacts can occur from a concentration of multiple sources that, individually, comply with air pollution control requirements or fall below risk thresholds, but in the aggregate, pose a public health risk to exposed individuals. These sources can be heavy or light-industrial operations or commercial facilities such as autobody shops, gas stations, dry cleaners, and chrome platers.

   Large industrial areas are not the only land uses that may cause public health concern in mixed-use communities. Cumulative air pollution impacts can also occur if land uses do not adequately buffer or otherwise protect sensitive individuals from potential air pollution impacts from nearby commercial-industrial or light industrial sources. This can occur with activities such as truck idling and traffic congestion, or from indirect sources such as warehousing facilities that are located in a community or neighborhood. Section 4 provides more information on this subject and provides examples of actions that land use agencies should consider to reduce air pollution impacts from these sources. Readers can also refer to ARB's Land Use and Air Quality Linkage Report[3] for smart growth ideas that should be considered to balance community goals for jobs, housing, and transportation mobility with clean air. As discussed in the Report, mixed-use development may potentially reduce mobile source emissions by reducing vehicle trips and commuting distances. Such consideration may be appropriate within an analysis of cumulative impacts.

[3] Readers can refer to ARB's website at http://www.arb.ca.gov/ch/programs/link97.pdf for a copy of this report.

2. What mechanisms can land use agencies use to avoid or help reduce air pollution related health risk associated with new projects?

As discussed earlier, there are two key issues to consider relative to new projects – incompatible land uses resulting from project location and cumulative impacts in terms of multiple air pollution sources in a community. The broad concept of cumulative air pollution impacts reflects the combination of regional air pollution levels and any localized impacts. Many factors contribute to air pollution levels experienced in any location. These include urban background air pollution, historic land use patterns, the prevalence of freeways and other transportation corridors in proximity to homes and schools, the concentration of industrial and commercial businesses in mixed-use communities, and local meteorology. While mobile sources are the predominant contributor to regional as well as community-level health risk from air pollution, the impacts of project location and the concentration of facilities emitting air pollution need to be considered in the land use decision-making process.

Sometimes, new projects that would comply with zoning and air pollution control requirements may still result in an elevated air pollution impact to nearby sensitive individuals, either individually or in combination with existing air pollution sources in a community. Such potential problems might be reduced or avoided by taking a closer look at project categories are appropriate for the proposed locations. A screening process could help determine whether more in-depth air pollution analysis may be needed prior to project approval. The appendices to the Handbook offer information that land use agencies should consider when determining if a proposed project may require a special assessment. Appendix C provides a description of air quality information and tools for assessing potential cumulative impacts.

A land use agency or school district can consider the potential health risk associated with a new project by using available analytical methodologies and the current land use planning, zoning, and permitting processes. The technical information and assessment tools currently range from screening type assessments to more sophisticated methods. Local air districts and ARB are working together to make the existing information more readily available to project applicants, local land use agencies, and the public.

The following concepts provide some general and specific approaches that land use agencies (or, as applicable, school districts) could use to address the potential for land use-related air pollution impacts from new projects. Each of these approaches can help to reduce the potential impacts that projects may have on public health.

Planning and Zoning

1) Update General Plan Policies

The OPR General Plan Guidelines provides an effective and long-term approach to reduce cumulative air pollution impacts. In 2003, OPR revised its General Plan Guidelines, highlighting the importance of incorporating sustainable development and environmental justice policies in the planning process.

Land use agencies should consider updating General Plan policies to address the issue of cumulative impacts. For instance, specific policies within the General Plan could include actions to reduce diesel PM emissions from land use activities and indirect sources that are frequented by diesel-fueled vehicles.

As indicated in Section 4, the General Plan can also address or integrate air quality-beneficial objectives, policies, and strategies in a number of ways. One way is to include air quality considerations into any one or several General Plan elements aimed at preventing or reducing air pollution emissions, exposure, and risk that might be associated directly or indirectly from General Plan policies or actions.

OPR's General Plan Guidelines discuss how different elements can be used to address potential environmental impacts. For instance, a safety element with an air quality component could be used to incorporate policies or objectives that are intended to protect the public from environmental hazards, including air toxics. Likewise, an air quality component of the circulation element could include policies or standards to prevent or reduce local exposure from diesel exhaust from trucks and other vehicles by establishing alternative routes for heavy-duty diesel trucks and buses away from residential areas. By considering the relationship between air quality and transportation, the circulation element could also include air quality policies to prevent or reduce trips and travel, and thus vehicle emissions. Land use element policies that identify areas appropriate for future industrial, commercial, and residential uses can also address design and distance parameters that reduce emissions, exposure, and risk from commercial or industrial land uses that are in close proximity to residential areas or schools.

Land use agencies could also consider a stand-alone air quality element that serves as a policy level document that establishes regional as well as community health goals.[4] Currently, approximately 100 cities and counties in California have adopted air quality elements.

[4] Several jurisdictions in California have adopted air quality elements, including the City of Roseville, Palm Desert, and Sacramento County. For further information, please refer to the California Resources Agency web site at: http://elib.cs.berkeley.edu/cgi-bin/doc_query?where-location=&where-doc_type=generalplan&special=ceres

The air quality element can also provide a general reference guide that informs local land use planners about regional and community level air quality, regulatory air pollution control requirements and guidelines, references emissions and pollution source data bases and assessment and modeling tools. As is further described in Appendix C of the Handbook, new assessment tools are being developed by the ARB can be included into the air quality element by reference. For instance, ARB's statewide risk maps could be referenced in the air quality element as a resource that could be consulted by developers or land use agencies. ARB or district technical supplements could also be generally referenced in an air quality element as a resource for use in the land use decision-making process.

2) Review Zoning Requirements

Zoning requirements may not always reflect the most recent policies and findings regarding community health and cumulative air pollution impacts. Where this is the case, new projects may exacerbate poor land use practices of the past and contribute to existing air pollution problems in the community.

Sometimes, especially in mixed-use zones, there is a potential for existing commercial and/or industrial operations to result in cumulative impacts to new development projects. For example:

- An assisted living project is sited in a mixed-use zone adjacent to an existing chrome plating facility;
- Multiple industrial sources regulated by an air district are located directly upwind of a new apartment complex;
- A mixed residential/light industrial or commercial/industrial zone attracts diesel-fueled delivery trucks and transport refrigeration units; or ;
- A new housing development or sensitive receptor location is sited without adequate setbacks from a major transportation corridor..

By separating incompatible land uses (for instance with transitional or buffer zone areas), zoning requirements can prevent or reduce air pollution impacts. Land use agencies should also consider conditional use permits (see discussion below) for new projects to prevent or reduce health risk attributable to the proximity of an air pollution source to sensitive individuals.

Zoning codes could be updated to require the separation of incompatible land uses for proposed new projects. The use of buffer zones, which separate industrial and residential land uses, or transitional use zones such as green spaces, should be considered. As part of the public process for making zoning changes, local land use agencies could work with community planning groups, local businesses, and community residents to determine how best to address existing incompatible land uses.

Land Use Permitting

1) Ask Appropriate Questions

While the ARB and local air districts are primarily responsible for programs to improve air quality, land use agencies can make important contributions to neighborhood-scale air quality in their communities. For instance, new commercial uses or industrial facilities can be sited some distance away from populated areas so that the potential for emissions, exposure, and risk is avoided. Land use agencies can also set permit conditions that impose property setbacks, or design standards that mitigate or reduce emissions exposure to the nearby community.

It is important for land use decision-makers to ask appropriate questions about the potential impacts of proposed projects – both project specific impacts and the nature of existing air pollution sources in the same impact area. Land use information can answer questions about the proximity of air pollution sources to sensitive receptors, the potential for incompatible land uses, and the location and nature of nearby air pollution sources. Air pollution information, available from the ARB and local air districts, can provide information about the types and amounts of air pollution emitted in an area, regional air quality concentrations, and health risk estimates for specific sources.

General Plans, parcel maps, and zoning maps are an excellent starting point to understand the impact potential in different locations. These documents contain information about existing or proposed land uses for a specific location as well as the surrounding area.

Often, just looking at a map of the proposed location for a facility and its surrounding area will help to identify possible adjacent incompatible land uses.

Some types of useful information that land use agencies should have on hand or have accessible include:

- Base map of the city or county planning area and terrain elevations.
- General Plan designations of land use (existing and proposed).
- Zoning maps.
- Land use maps that identify existing land uses, including the location of facilities that are permitted or otherwise regulated by the local air district. Land use agencies should consult with their local air district for information on regulated facilities.
- Demographic data, e.g., population location and density, distribution of population by income, distribution of population by ethnicity, and distribution of population by age. The use of population data is a normal part of the planning process. However, from an air quality perspective, socioeconomic data is useful to identify potential community health and environmental justice issues.

- Emissions, monitoring, and risk-based maps created by the ARB or local air districts that show air pollution-related health risk by community across the State.
- Location of public facilities that enhance community quality of life, including parks, community centers, and open space.
- Location of industrial and commercial facilities and other land uses that use hazardous materials, or emit air pollutants. These include chemical storage facilities, hazardous waste disposal sites, dry cleaners, auto body shops, and metal plating and finishing shops.
- Location of sources or facility types that result in diesel on-road and off-road emissions, e.g., stationary diesel power generators, forklifts, cranes, construction equipment, on-road vehicle idling, and operation of transportation refrigeration units. Distribution centers, marine terminals and ports, rail yards, large industrial facilities, and facilities that handle bulk goods are all examples of complex facilities where these types of emission sources are frequently concentrated.[5] Very large facilities, such as ports, marine terminals, and airports, could be analyzed regardless of proximity to a receptor if they are within the modeling area.
- Location and zoning designations for existing and proposed schools, buildings, or outdoor areas where sensitive individuals may live or play.
- Location and density of existing and proposed residential development.
- Zoning requirements, property setbacks or buffer zone policies, traffic flow requirements, and idling restrictions for trucks, trains, yard hostlers[6], construction equipment, or school buses.
- Traffic counts (including diesel truck traffic counts), within a community to validate or augment existing regional motor vehicle trip and speed data.

2) Strengthen Mitigation

In addition to considering the appropriateness of the project location, opportunities for mitigation of air pollution impacts should be considered. Sometimes, a land use agency may find that selection of a different location for a project would not be desirable, timely, or feasible. When that happens, land use agencies should also consider if design improvements or other strategies would reduce air pollution health risk. Such strategies could include conditional use permits, performance or design standards, and mitigation measures. Potential mitigation measures could

[5] The ARB is currently evaluating the types of facilities that may act as complex point sources and developing methods to identify them.

[6] Yard hostler means a tractor less than 300 horsepower that is used to transfer semi-truck or tractor-trailer containers in and around storage, transfer, or distribution yards or areas and is often equipped with a hydraulic lifting fifth wheel for connection to trailer containers.

take into account feasible, cost-effective solutions within the available resources and authority of implementing agencies to enforce.[7]

- **Conditional Use Permits**

Some types of land uses are only allowed upon approval of a conditional use permit (also called a CUP or special use permit). These uses might include community facilities (i.e., hospitals or public playground), public buildings or grounds (i.e., public fleet garages), or uses with potentially significant environmental impacts (i.e., hazardous chemical storage or surface mining). Local zoning ordinances specify the uses for which a conditional use permit is required, the zones they may be allowed in, and public hearing procedures. When allowing a project, the conditional use permit imposes special requirements to insure that the use will not be detrimental to its surroundings. Conditional use permits can include non-regulatory performance standards that are not typically imposed on the project by a local air district and can include such things as limited parking, limited hours of operation, property setbacks, or road improvements. A conditional use permit does not re-zone the land.

Conditional use permits can sometimes be useful in siting a project to reduce emissions that might otherwise pose an unacceptable impact to public health. Land use agencies should consider a range of conditional use options that could be applied generically to source categories of greatest concern.

- **Performance Standards**

In the context of land use planning, performance standards are requirements imposed on projects or project categories through conditional use permits to ensure compliance with general plan policies, local ordinances. These standards could apply to such project categories as distribution centers, gas stations, autobody shops, dry cleaners, metal platers, and print shops. Land use agencies may wish to consider changes to zoning ordinances in mixed-use communities to include performance standards for certain project categories. Such standards would provide certainty and equitable treatment to all projects of a similar nature, and reserve the more resource intensive conditional or special use permits to projects that require a more detailed analysis. In development of project design or performance standards, land use agencies should consult with the local air district to avoid duplication or inconsistency with district air pollution control requirements when considering the site-specific aspects of a project.

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[7] A land use agency has the authority to deny a project based upon information collected and evaluated through the land use decision-making process. However, any denial would need to be based upon identifiable, generally applicable, articulated standards set forth in the local government's General Plan, zoning codes, and other applicable local ordinances. One way of averting this drastic step is to conduct early and regular outreach to the community and the local air district so that community and environmental concerns can be addressed and accommodated into the project proposal.

Examples of air quality-specific performance standards include the following:

- Placing a process vent away from the direction of the local playground that is nearby or increasing the stack height so that emissions are dispersed to have a reduced impact on surrounding homes or schools.
- Property setbacks between the project fence line and the population center.
- A reduced-idling ordinance to apply to all operators of motor vehicle fleets (over a certain size) that use diesel-fueled engines.
- An ordinance that requires fleet operators to purchase clean-fueled vehicles before project approval (if a new business), or when expanding the fleet (if an existing business); and
- Designing routes for truck operations that discourage congestion detours into residential neighborhoods.

3) Consult Local Air Districts and Other Agencies

When questions arise regarding the air quality impacts of projects, including potential cumulative impacts, land use agencies should consult the local air district. Land use agencies should also consider the following suggestions to avoid creating new incompatible land uses:

- Consult with the local air district to help determine whether emissions from a particular project will adversely impact sensitive individuals in the area.
- Continue to check with the ARB for new information on Technical Supplements and modeling tools that would be applicable to projects seeking to site within your jurisdiction. Also make use of ARB's clearinghouse for information on what measures other jurisdictions are using to address comparable issues or sources.
- Become familiar with ARB's Land Use-Air Quality Linkage Report to determine whether approaches and evaluation tools contained in the Report can be used to reduce transportation-related impacts on communities.
- Contact the local air district to determine if existing or future effective regulations or permit requirements will affect the proposed project or other sources in the vicinity of the proposed project.
- Contact and collaborate with other State agencies that play a role in the land use decision-making process, e.g., the State Department of Education, the California Energy Commission, and Caltrans, for information on mitigation measures and mapping tools that could be useful in addressing local problems.

4) Use Public Outreach Effectively

Above all, actively soliciting input, sharing information, and offering incentives for good projects is critical to breaking the cycle of poor land use practices. Land use agencies should consider using existing outreach mechanisms to reduce the potential of cumulative impacts from new sources.

- **Community-Based Planning Committees**

Neighborhood-based or community planning advisory councils could be established to invite and facilitate direct citizen participation into the planning process. With the right training and technical assistance, such councils can provide valuable input and a forum for the review of proposed amendments to plans, zone changes, land use permits, and suggestions as to how best to prevent or reduce cumulative air pollution impacts in their community.

- **Regional Partnerships**

Consider creating regional coalitions of key growth-related organizations from both the private and public sectors, with corporations, communities, other jurisdictions, and government agencies. Such partnerships could facilitate agreement on common goals and win-win solutions tailored specifically for the region. With this kind of dialogue, shared vision, and collaboration, barriers can be overcome and locally acceptable sustainable solutions implemented. Over the long term, such strategies will help to bring about clean air in communities as well as regionally.

- **Direct Community Outreach**

In conjunction with local air districts, land use agencies should consider designing an outreach program for community groups, other stakeholders, and local government agency staffs that address the problem of cumulative air pollution impacts, and the public and government role in reducing these impacts. Such a program could consider analytical tools that assist in the preparation and presentation of information in a way that supports sensible decision-making and public involvement. More detailed information can be found in section 9.

- **Information Clearinghouse**

Land use agencies should consider using the ARB statewide clearinghouse that will be used to post the Handbook's technical supplements and other relevant information.

School Siting

As the demand for new schools rises, finding suitable and affordable land remains at a premium. This is especially true for the State's major metropolitan areas with high-density inner city space limitations. In such cases, school districts should engage throughout the siting process with land use agencies and local air districts to devise design standards and mitigation measures that can reduce to the maximum feasible extent the potential for cumulative emissions, exposure, and health risk to students and school workers.

Such a collaborative effort could involve holding joint public meetings and disseminating information materials to parents, school workers, and the community and seek input on actions that can be taken to avoid harmful pollution exposure and health risk.

Land use-specific mechanisms can go a long way toward addressing cumulative impacts from new air pollution sources. Additionally, close collaboration and communication between land use agencies and local air districts in both the planning and project approval stages can further reduce these impacts. Local agency partnerships can also result in early identification of potential impacts from proposed activities that might otherwise escape environmental review. When this happens, pollution problems can be prevented or reduced before projects are approved, when it is less complex and expensive to mitigate.

The next section addresses available air quality assessment tools that land use agencies can use to evaluate the potential for localized or cumulative impacts in their communities.

3. What assessment approaches are available to provide information on potential cumulative air pollution impacts?

Until recently, California has traditionally approached air pollution control from the perspective of assessing whether the pollution was regional, category-specific, or from new or existing sources. This methodology has been generally effective in reducing statewide and regional air pollution impacts and risk levels. However, such an incremental, category-by-category, source-by-source approach may not always address community health impacts from multiple sources – including mobile, industrial, and commercial facilities.

As a result of air toxics and children's health concerns over the past several years, ARB and local air districts have developed new tools to present, evaluate, and address cumulative air pollution impacts at the neighborhood scale where the potential for significant health impacts may exist.

For example, ARB has produced regional risk maps that show statewide trends for Southern and Central California in estimated inhalation cancer risk from air toxics between 1990 and 2010.[8] Additionally, ARB's Neighborhood Assessment Program builds on California's long-standing program to provide information to the public on air toxics in communities. Additionally, over the past 12 years, local air districts have collected air toxics data for individual industrial sources, notified the public of potentially high risk, and developed risk reduction plans for those sources that pose the highest risk to the public.

Community-Level Assessment Tools

One aspect of ARB's programs now underway is to consolidate and make accessible air toxics emissions and monitoring data by region, using modeling tools and other analytical techniques to take a preliminary look at emissions, exposure, and health risk in communities.

The ARB is taking two tracks for assessing cumulative impacts. The first track is to take a community-level approach that is designed to answer basic questions about community health, such as, "What is the air pollution risk in my community?" and "What are the important sources of air pollution near where I live?" While these questions are clearly of interest to community members, this information can also be useful to local land use agencies when making permitting and siting decisions.

[8]The ARB has produced State Trends and Local Cancer Risk Maps, which can be found at the ARB web site at: http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm

The second track for assessing cumulative impacts is to develop technical tools that will allow for a more rigorous cumulative impact analysis at a specific location or to assess the impact of a new facility.

Appendix C provides a general description of the impact assessment process and micro-scale, or community level modeling tools that are available to evaluate potential cumulative air pollution impacts. Modeling protocols will be provided as Technical Supplements to this Handbook. Additionally, the models will be accessible on ARB's website as they become available. The ARB will also provide land use agencies and local air districts with statewide regional modeling results and information regarding micro-scale modeling.

Following from the Neighborhood Assessment Program and other Board efforts, the ARB has developed multiple tools to assist land use agencies and local air districts perform assessments of cumulative emissions, exposure, and risk on a neighborhood scale. These include:

- Regional risk maps that show trends in regional-scale inhalation cancer risk from toxic air pollutants in southern and central California. These maps are based on the U.S. EPA's ASPEN model. These maps provide an estimate of background levels of toxic air pollutant risk but are not detailed enough to assess individual neighborhoods or facilities.

- Community Health Air Pollution Information System (CHAPIS) is a user-friendly, Internet-based system for displaying information on emissions from sources of air pollution in an easy to use mapping format. CHAPIS contains information on air pollution emissions from selected large facilities and small businesses that emit criteria and toxic air pollutants. It also contains information on air pollution emissions from motor vehicle emissions. CHAPIS does not contain information on every source of air pollution or every air pollutant. It is a major objective of CHAPIS to include all of the largest air pollution sources and those with the highest documented air pollution risk. Additional facilities will be added to CHAPIS as more data becomes available.

- Hot Spots Analysis and Reporting Program (HARP) is a software database package that evaluates emissions from one or more facilities to determine the overall health risk posed by the facility(ies) on the surrounding community. Proper use of HARP ensures that the risk assessment meets the latest risk assessment guidelines published by the State Office of Environmental Health Hazard Assessment (OEHHA). HARP is designed with air quality professionals in mind and is available from the ARB.

- Urban Emissions Model (URBEMIS) is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, office buildings, and

construction projects. URBEMIS uses emission factors available from the ARB to estimate vehicle emissions associated with new land uses.

Land use planners, local air districts, and others can use these tools to assist in the assessment of feasibility of a new project, or plan revision. For example, these tools can help to:

- Identify the background inhalation cancer risk from toxic air pollution in the area under consideration;
- Identify the major sources of air pollution in the area under consideration;
- Estimate the risk from a proposed new facility and how that risk adds to the overall risk when combined with the risk from other nearby facilities;
- Determine whether the community is already heavily impacted by air pollution because of a combination of background air pollution and the presence of multiple emission sources; and
- Provide information to decision-makers and key stakeholders on whether there may be significant issues related to cumulative emissions, exposure, and health risk due to a permitting or land use decision.

The ARB is in the process of developing tools that show promise for assessing cumulative air pollution health impacts. Such tools are very data intensive, requiring current emissions data from businesses and industry, transportation sources, mobile sources, and land uses where sensitive individuals may live or play.

If a land use agency wishes to perform its own cumulative air pollution impact analysis using any of these tools, it should consult with the ARB and/or the local air district to obtain information or assistance on the data inputs and procedures necessary to operate the program. In addition, land use agencies could consult with local air districts to determine the availability of land use and air pollution data for entry into an electronic Geographical Information System (GIS) format. GIS is an easier mapping tool than the more sophisticated models described in Appendix C. GIS mapping makes it possible to superimpose land use with air pollution information so that the spatial relationship between air pollution sources, sensitive receptors, and air quality can be visually represented.

For further information on these methodologies, please refer to Appendix C.

4. What types of projects or siting scenarios may require special assessment?

The ARB's Policies and Actions for Environmental Justice state that "it shall be the ARB's policy to work with local land-use agencies, transportation agencies and air districts to develop ways to assess, consider, and reduce cumulative emissions, exposures, and health risks from air pollution through general plans, permitting, and other local actions."

One of the ARB's principal motivations for developing this Handbook is to assist land use planning and permitting agencies in addressing potential regulatory gaps that could result in situations that contribute to an elevated health risk from air pollution. For instance, as part of the CEQA process for siting a new industrial or commercial facility, the source must evaluate its potential to impact the environment or public health. As part of this process, the new source must evaluate whether residual emissions (emissions after pollution control has been applied) may still pose a health risk to sensitive individuals who may live nearby. The new source may also have to assess its contribution to an existing concentration of air pollution sources in a particular neighborhood, even assessing whether prevailing winds have the potential to blow its emissions into nearby homes or schools.

However, the flip side to the environmental assessment process – evaluating the potential environmental health impacts of non-regulated land uses, such as new housing or residential areas in proximity to existing polluting sources -- constitutes a primary regulatory gap that can be addressed by land use agencies.

As indicated earlier, an incompatible land use is one that places sensitive individuals in close proximity to emission sources. The following examples illustrate potential incompatible land use scenarios that can result from the placement of new residential areas or schools in close proximity to polluting sources:

- A proposed site for new housing is downwind of a permitted small business or light-industrial facility that will emit a small amount of highly potent air toxic, such as hexavalent chromium;
- A newly proposed residential area or school that would be adjacent to an existing warehousing complex that induces a great deal of diesel truck traffic; or
- A new housing project that is proposed adjacent to a freeway where the prevailing winds blow highway truck traffic directly into the area proposed for the project's playground.

Table 4-1 identifies examples of facility types that may emit potentially significant amounts of toxic air pollutants. New facilities in these categories are typically required to get a permit from the local air district, and/or perform a review to

Table 4-1 – Examples of Facility Types That May Emit Toxic Air Contaminants

Categories	Facility Type	Potentially Significant Emitted Toxics
Commercial		
	Dry Cleaners	Perchloroethylene
	Gas Stations	Benzene
	Autobody Shops	Metals, Solvents
	Furniture Repair	Solvents[1]
	Film Processing Services	Solvents
	Warehouses and Supermarkets	Diesel Particulate Matter
	Printing Shops	Solvents
	Diesel Engines	Diesel Particulate Matter
Industrial		
	Construction	Particulate Matter
	Manufacturers	Solvents, Metals
	Metal Platers, Welders, Metal Spray (flame spray) Operations	Hexavalent Chromium, Nickel, Metals
	Chemical Producers	Solvents, Metals
	Gasoline Refineries	Benzene, Solvents, Metals, PAHs, Dioxin
	Furniture Manufacturers	Solvents
	Shipbuilding and Repair	Hexavalent chromium and other metals, Solvents
	Rock Quarries and Cement Manufacturers	Particulate Matter
	Hazardous Waste Incinerators	Dioxin, Solvents, Metals
	Power Plants	Benzene, Formaldehyde, Particulate Matter
	Research and Development Facilities	Solvents, Metals, etc.
	Freight Distribution Centers	Diesel Particulate Matter
Public		
	Landfills	Benzene, Vinyl Chloride, Diesel Particulate Matter
	Waste Water Treatment Plants	Hydrogen Sulfide
	Medical Waste Incinerators	Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene
	Recycling, Garbage Transfer Stations	Diesel Particulate Matter
	Municipal Incinerators	Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene
Transportation		
	Port Facilities	Diesel Particulate Matter
	Airports	Benzene, Formaldehyde
	Rail Yards	Diesel Particulate Matter
	Freeways and Roadways	Diesel Particulate Matter, Benzene, 1,3-Butadiene, Formaldehyde

[1]Not all solvents are toxic air contaminants. As contained in this table, "solvents" include those products that contain toxic air contaminants.

determine and address the potential for significant environmental impacts. However, new housing or other similar projects where sensitive individuals would

live or play are not always required to perform equivalent assessments to determine whether the local existing environment would affect the health to these new residents.

Appendix A provides a more extensive list of land use classifications and associated facility categories that could emit air pollutants. The purpose of this appendix is to alert land use agencies to the types of air pollutants that are typically emitted by different project categories, including commercial and retail businesses, industry, transportation, and home building and construction.

Appendix B poses a range of questions that land use agencies should consider when reviewing new projects for potential air quality impacts. These questions are intended to raise the awareness of land use agencies to the possibility that, even after addressing applicable air pollution control and zoning requirements, a proposed new project may still contribute to air pollution impacts in nearby neighborhoods. Additional scrutiny, beyond the routine land use decision-making process, could help reduce or avoid health risk from new projects.

The questions contained in this appendix suggest a two-part process for evaluating projects within the land use decision-making process. Appendix B-1 includes questions designed to help assess project impacts, especially incompatible land use. Appendix B-2 includes questions related to cumulative impacts assessment. It is primarily designed to identify whether there is a concentration of multiple sources in the neighborhood or community that should be considered as part of the land use decision-making process for a proposed project.

These questions do not imply any particular action that should be taken by land use decision-makers. Rather, the questions are intended to highlight potential air pollution impacts and facilitate informed decision-making.

Scenarios That May Lead to Incompatible Land Uses

Table 4-2 lists some common types of facilities that the ARB staff has identified as having the potential to result in incompatible land uses if located near sensitive individuals. For these facilities, additional analysis may be needed to determine whether the proposed location is appropriate, or if additional mitigation is advisable. While many types of facilities might raise concerns about incompatible land uses, Table 4-2 focuses on source categories of greatest potential concern --

Table 4-2
Facilities with Potential for Incompatible Land Uses

- Chrome Plating Facilities
- Dry Cleaners
- Major Freeways of High Traffic Areas
- Truck Stops and Distribution Centers
- Cold Storage Facilities
- Intermodal Transport Facilities
- Rail Yards and Locomotive Repair/Maintenance Facilities

small facilities that emit air toxics, and transportation-related facilities whose near source impacts have often not been 1fully assessed in the past.

As indicated earlier, the CEQA process examines the impacts of a new facility on the local environment. It does not examine the potential impacts of existing facilities on a new project that may not itself pose an environmental impact. This is an important consideration for projects where sensitive individuals spend extended time such as hospitals, playgrounds, and residential areas. State law requires that school districts identify potential sources of toxic pollutant releases within a quarter mile radius of the proposed school site. Planning agencies could use a similar approach to identify air toxics sources in the vicinity of proposed new housing or other types of projects frequented by sensitive individuals. Table 4-3 lists projects where sensitive individuals are likely to be present that may need additional analysis if being proposed in the vicinity of a polluting facility such as those in Table 4-2.

Table 4-3
Projects Frequented by Sensitive Individuals

- Schools
- Housing
- Day Care Centers
- Playgrounds
- Elder Care Centers
- Hospitals
- Youth Activity Centers

The following examples represent generalized situations based upon evaluations of the impacts of air pollution sources performed by ARB and local air districts. This is not intended to be an exhaustive list, but it does contain some of the more common types of scenarios that may arise. General scenarios are presented here rather than specific technical information, because there are many potential variables involved in determining air pollution impacts. The final zoning or siting decision should be based on a wide array of site-specific information and local considerations. Actual risks from these source categories will vary due to site specific parameters including equipment technologies, emission rates, fuel properties, meteorology, the nature of surrounding buildings and terrain, and where sensitive individuals may be located. ARB is working with local air district on Technical Supplements that will provide additional information on assessment and mitigation approaches that may be used on a facility-specific basis.

- **Chrome Plating Facilities**

Chrome electroplating facilities emit hexavalent chromium (chromium VI) which is an extremely toxic air pollutant. Breathing air that contains even very low amounts of hexavalent chromium for long periods of time may lead to increased cancer risk. Chromium VI emissions are of particular concern when chrome-plating businesses are located near places frequented by the public, such as residential neighborhoods and schools. While chrome plating facilities must meet stringent emission control requirements, ARB investigations indicate that there may still be

a substantial residual risk in the vicinity near these facilities. Therefore, it is not advisable to site a chrome plater near houses, schools or other areas frequented by the public or vice versa. In addition to chrome electroplating facilities, thermal chrome plating processes, such as flame spraying, and certain types of welding also have the potential to release chromium VI. The ARB is in the process of developing airborne toxic control measures for both of these activities.

- **Dry Cleaners**

Dry cleaners that use the cleaning solvent perchloroethylene are subject to strict emission control requirements to reduce exposure of this potential human carcinogen to the public. In some areas, use of this dry cleaning solvent is being phased out altogether. However, a dry cleaner in close proximity to a sensitive facility or a dry cleaner located in a residential building, may still present a significant potential cancer risk to people near-by. Some mitigation options include having the dry cleaning performed at an off-site facility or using environmentally friendly dry cleaning options that do not use perchloroethylene. Another potential approach is to adopt zoning requirements that prevent siting of one or more dry cleaners near homes or in or near residential buildings. Special attention should also be paid to proposals to site homes or apartments near existing large dry cleaning facilities or where there are several dry cleaners nearby.

- **Freeways or Other Busy Traffic Corridors**

This situation will most likely arise in the context of siting a project frequented by sensitive individuals near a freeway or other busy traffic corridor. State law (Education Code Section 17213) defines "freeway or other busy traffic corridors" as "those roadways that, on an average day, have traffic in excess of 50,000 vehicles in a rural area as defined in Section 50101 of the Health and Safety Code, and 100,000 vehicles in an urban area, as defined in Section 50104.7 of the Health and Safety Code." ARB studies show that air pollution levels can be significantly higher within 500 feet of freeways or other busy traffic corridors, but return to around background levels within around 1000 feet. State law requires air dispersion modeling if a proposed school site is within 500 feet of a freeway or other busy traffic corridor. Dispersion modeling -- which studies how emissions are carried or "dispersed" through the air -- can estimate the air quality impact of the freeway on nearby areas. Similar types of assessments may be useful in evaluating proposed locations for new residential areas.

- **Intermodal Transport Facility**

Intermodal transport facilities are used to transfer freight and goods from one type of transportation to another, such as from trains onto trucks, or from ports onto trains. These facilities can have heavy-duty diesel truck traffic and other diesel-emitting equipment, such as cranes and forklifts. The air pollution impacts of the

increases in trucking and rail activity in and around these facilities are not subject to permits by local air districts and should be addressed through the CEQA process. The magnitude of increases in risk depends on operational parameters such as the number of trucks, marine vessels, locomotives, and associated equipment. Mitigation measures may include: setbacks between the facility and sensitive individuals, facility operating procedures that minimize truck and locomotive idling times at the facility, and restrictions on parking or idling trucks waiting to enter the facility.

Port facilities that have a wide array of equipment, including marine vessels, cranes, harbor craft, bulk material handling equipment, fumigation facilities, trains, and heavy-duty trucks can have an air quality impact on the surrounding area. Much of the mobile source activity occurring at ports is not subject to air district permit and should be addressed through the CEQA process. The types of projects that would be included in this category are port expansion projects and the siting of sensitive receptor projects in the vicinity of a major port.

Reduction of emissions from ports is a high priority for the ARB. The ARB has been working closely with the ports of Los Angeles and Long Beach to implement measures to reduce diesel emissions at these facilities. The ARB is also conducting a special study in the Wilmington area to better understand the impacts of port operations, support facilities, and related truck and train traffic on the local community.

- **Major Truck Stops and Distribution Facilities**

There is a potential for significant risk from diesel particulate matter at facilities that attract large numbers of diesel-fueled vehicles, including major truck stops, warehouses, and distribution centers. Such facilities can typically handle hundreds of heavy-duty trucks per day, but lessor numbers of trucks may still have localized impacts. Mitigation measures may include: setbacks between the facility and areas where sensitive individuals are located, operating procedures that minimize truck idling at the facility, and restrictions on parking or idling trucks waiting to enter the facility.

- **Cold Storage Facilities**

Cold storage distribution centers are of special interest because they attract large numbers of diesel trucks, many of which have transport refrigeration units (TRUs) to maintain climate control for perishable material. Cold storage distribution centers have the potential for higher emissions than standard warehouses or distribution centers because in addition to the increase in diesel truck traffic, auxiliary diesel engines must be run to maintain the temperature in the trailers and shipping containers.

Having a large number of diesel trucks or TRUs operating on a routine basis can create a local air pollution problem for sensitive individuals living nearby. The ARB has recently adopted a statewide control measure to reduce diesel particulate matter from TRUs and is developing a control measure to limit truck idling. This measure reduces emissions from TRUs, but a large concentration of TRUs at a single location may still have localized impacts. Because the potential localized impact of emissions from diesel trucks and TRUs should be evaluated in the land use decision making process, the ARB will be developing a supplement to this Handbook to provide additional information on evaluating these facilities.

- **Rail Yards and Locomotive Repair/Maintenance Facilities**

Locomotives can also be a significant source of diesel exhaust particulate emissions. In rail yards or at locomotive repair/maintenance facilities, numerous locomotives can operate or idle over an extended period of time. ARB studies have shown that the impact of diesel particulate emissions on a neighboring community can be similar to that of a major freeway. Because proposals for new or expanded rail yards or locomotive repair facilities are a rare occurrence, the primary interest in these facilities would be proposals to site new housing, schools, playgrounds, or other sensitive receptor projects in the vicinity of an existing rail yard or repair facility.

- **Other Air Pollution Considerations**

Other air pollution considerations include the potential for a facility to release odors or generate dust. Because odors are the most common source of air pollution complaints from residents, they should also be considered in the project review process. In addition to being an annoyance, odors can exacerbate underlying medical conditions and cause stress-induced illness. Table 4-4 lists the top sources of odor complaints received by the South Coast Air Quality Management District over the last three years. One way to minimize odor complaint problems is allowing for adequate buffer areas between new odor sources and the public or between new public facilities and existing odor sources.

Table 4-4
Top Sources of Odor Complaints in the SCAQMD (3/2001 – 3/2004)

- Sewage Treatment Plants
- Landfills
- Recycling Facilities
- Waste Transfer Stations
- Petroleum Refineries
- Biomass Operations
- Autobody Shops
- Coating Operations
- Fiberglass Manufacturing
- Foundries

While not as common as those facilities listed in Table 4-4, rendering plants can also produce serious odor problems over a wide area.

After odors, sources of dust are also a common source of air pollution-related complaints from the public. Operations that sometimes result in dust complaints are rock crushing, sand and gravel operations, stone quarrying, and mining operations. Zoning or siting decisions should include consideration of appropriate setbacks or other mitigation that can minimize dust impacts on residential areas or other areas where sensitive individuals are likely to be present.

5. How will the actions taken by ARB and local air districts to improve air quality complement the land use decision-making process?

ARB's regulatory programs reduce air pollutant emissions through statewide strategies that improve public health in all California communities. ARB's overall program addresses motor vehicles, consumer products, air toxics, air-quality planning, research, education, enforcement, and air monitoring. Community health and environmental justice concerns are a consideration in all these programs. ARB's programs are statewide but recognize that extra efforts may be needed in some communities due to historical mixed land-use patterns, limited participation in public processes in the past, and a greater concentration of air pollution sources in some communities.

ARB's strategies are intended to result in better air quality and reduced health risk to residents throughout California. The ARB's priority is to prevent or reduce the public's exposure to air pollution, including from toxic air contaminants that pose the greatest risk, particularly to infants and children who are more vulnerable to air pollution.

In October 2003, ARB updated its statewide control strategy to reduce emissions from source categories within its regulatory authority. A primary focus of the strategy is to achieve federal and State air quality standards for ozone and particulate matter throughout California, and to reduce health risk from diesel particulate matter. Along with local air districts, ARB will continue to address air toxics emissions from regulated sources (see Table 5-1 for a summary of ARB activities). As indicated earlier, ARB will also provide analytical tools and information to land use agencies and local air districts to help assess and mitigate cumulative air pollution impacts.

The ARB will continue to consider the adoption of or revisions to needed air toxics control measures as part of the State's ongoing air toxics assessment program.[9]

As part of its effort to reduce particulate matter and air toxics emissions from diesel PM, the ARB has developed a Diesel Risk Reduction Program[10] that lays out several strategies in a 3-pronged approach to reduce emissions and their associated risk:

- Stringent emission standards for all new diesel-fueled engines;
- Aggressive reductions from in-use engines; and
- Low sulfur fuel that will reduce PM and still provide the quality of diesel fuel needed to control diesel PM.

[9] For continuing information and updates on State measures, the reader can refer to ARB's website at http://www.arb.ca.gov/toxics/control.htm.
[10] For a comprehensive description of the program, please refer to ARB's website at http://www.ARB.ca.gov/diesel/dieselrrp.htm.

A few of the initial diesel risk reduction strategies include measures to reduce

Table 5-1
ARB ACTIONS TO ADDRESS
CUMULATIVE AIR POLLUTION IMPACTS IN COMMUNITIES

Information Collection

- Improve emission inventories, air monitoring data, and analysis tools that can help to identify areas with high cumulative air pollution impacts
- Conduct studies in coordination with OEHHA on the potential for cancer and non-cancer health effects from air pollutants emitted by specific source categories
- Establish web-based clearinghouse for land use strategies implemented at the local level

Emission Reduction Approaches (2004-2006)*

- Through a public process, consider development and/or amendment of regulations and related guidance to reduce emissions, exposure, and health risk at a statewide and local level for the following sources:
  - Diesel PM sources such as stationary diesel engines, transport refrigeration units, portable diesel engines, on-road public fleets, off-road public fleets, heavy-duty diesel truck idling, harbor craft vessels, diesel fuel and waste haulers
  - Other air toxics sources, such as formaldehyde in composite wood products, hexavalent chromium for chrome plating and chromic acid anodizing, thermal spraying, and perchloroethylene dry cleaning
- Develop technical supplements and/or guidance documents for the following:*
  - Modeling tools such as HARP and CHAPIS
  - Stationary diesel engines
  - Distribution centers
  - Auto painting shops
  - Lead sources/risk management
- Adopt rules and pollution prevention initiatives within legal authority to reduce emissions from mobile sources and fuels, and consumer products
- Develop and maintain Air Quality Handbook as a tool for use by land use agencies and local air districts to address cumulative air pollution impacts

Other Approaches

- Support additional funding for high priority mobile source emission reduction projects

*Because ARB will continue to review the need to adopt or revise statewide measures, the information contained in this chart will be updated on an ongoing basis. For current information, see ARB's website at: (actual URL will be identified in the final document).

emissions from refuse haulers, urban buses, and stationary and portable diesel engines -- sources that are important from a community perspective.[11]

[11] The reader can refer to ARB's website for information on its mobile source-related programs at: http://www.arb.ca.gov/msprog/msprog.htm.

The ARB will continue to evaluate the health effects of air pollutants while implementing programs with local air pollution control districts to reduce air pollution in all California communities.

Local air districts also have ambitious programs to reduce criteria pollutants and air toxics from regulated sources in their region. Many of these programs also benefit air quality in local communities as well as in the broader region. For more information on what is being done in your area to reduce cumulative air pollution impacts through air pollution control programs, you should contact your local air district.[12]

[12] Local air district contacts can be found on the inside cover to this Handbook.

6. How can meaningful public participation and access to information be enhanced?

Community involvement is an important part of the land use process. The public is entitled to the best possible information about the air they breathe and what is being done to prevent or reduce unhealthful air pollution in their communities. In particular, information on how land use decisions can affect air pollution and public health should be made accessible to all communities, including low-income and minority communities.

Effective community participation consistently relies on a free, two-way flow of information – from public agencies to community members about opportunities, constraints, and impacts, and from community members back to public officials about needs, priorities, and preferences. The outreach process needed to build understanding and local neighborhood involvement requires data, methodologies, and formats tailored to the needs of the specific community. More importantly, it requires the strong collaboration of local government agencies that review and approve projects and land uses to improve the physical and environmental surroundings of the local community.

Many land use agencies, especially those in major metropolitan areas, are familiar with, and have a long-established public review process. Nevertheless, public outreach has traditionally been passive, requiring the public to take the initiative in order to participate, and with little effort invested by an agency to actively solicit participation. Many residents are concerned that even when they do participate in a public process, it has little or no impact on the agency's decision. Active public involvement requires engaging the public in ways that do not require their previous interest in or knowledge of the land use or air pollution control requirements, and a commitment to taking action where appropriate to address the concerns that are raised.

Land use agencies and local air districts should consider seeking out the public in places where they are already gathering to provide information on what local government is doing to prevent or reduce health risk from air pollution. The outreach could involve presentations and briefings, distribution of printed information, or staffing an information booth. Agencies can then engage people who would not otherwise come to a formal public meeting about a local land use decision.

Table 6-1 contains some general outreach approaches that might be considered.

Table 6-1
Public Participation Approaches

- Staff and community leadership awareness training on environmental justice programs and community-based issues
- Surveys to identify the website information needs of interested community-based organizations and other stakeholders
- Information materials on local land use and air district authorities
- Community-based councils to facilitate and invite direct citizen participation in the planning process
- Neighborhood CEQA scoping sessions that allows for community input prior to technical analysis
- Public information materials on siting issues are under review including materials written for the affected community, and in different media that widens accessibility
- Public meetings
- Operating support for community-based organizations

To improve outreach, local land use agencies should consider the following activities:

- Hold meetings in communities affected by agency programs, policies, and projects at times and in places that encourage public participation, such as evenings and weekends at centrally located community meeting rooms, libraries, and schools.
- Provide childcare services at meetings.
- Assess the need for and provide translation services at public meetings.
- Hold community meetings to update residents on the results of any special air monitoring programs conducted in their neighborhood.
- Hold community meetings to discuss and evaluate the various options to address cumulative impacts in their community.
- In coordination with local air districts, make staff available to attend meetings of community organizations and neighborhood groups to listen to and, where appropriate, act upon community concerns.
- Establish a specific contact person for environmental justice issues.
- Increase student and community awareness of local government land use activities and policies through outreach opportunities.
- Make air quality and land use information available to communities in an easily understood and useful format, including fact sheets, mailings, brochures, public service announcements, and Web pages, in English and other languages.
- On the local government web-site, dedicate a page or section to what the land use program is doing regarding environmental justice and cumulative environmental impacts, and, as applicable, activities conducted with local air districts such as neighborhood air monitoring studies, pollution prevention, air pollution sources in neighborhoods, and risk reduction.

- Allow, encourage, and promote community access to land use activities, including public meetings, General Plan or Community Plan updates, zoning changes, special studies, CEQA reviews, variances, etc.
- Distribute information in multiple languages, as needed, on how to contact the land use agency or local air district to obtain information and assistance regarding environmental justice programs, including how to participate in public processes.
- Create and distribute a simple, easy-to-read, and understandable public participation handbook, which may be based on the “Public Participation Guidebook” developed by ARB.

LAND USE CLASSIFICATIONS AND ASSOCIATED FACILITY CATEGORIES THAT COULD EMIT AIR POLLUTANTS

(1) Land Use Classifications – by Activity[i]	(2) Facility or Project Examples	(3) Key Pollutants[ii,iii]	(4) Air Pollution Permits[iv]
COMMERCIAL/ LIGHT INDUSTRIAL: SHOPPING, BUSINESS, AND COMMERCIAL			
▲ Primarily retail shops and stores, office, commercial activities, and light industrial or small business	Dry cleaners; drive-through restaurants; gas stations; auto body shops; metal plating shops; photographic processing shops; textiles; apparel and furniture upholstery; leather and leather products; appliance repair shops; mechanical assembly cleaning; printing shops	VOCs, air toxics, including diesel PM, NOx, CO, SOx	Limited; Rules for applicable equipment
▲ Goods storage or handling activities, characterized by loading and unloading goods at warehouses, large storage structures, movement of goods, shipping, and trucking.	Warehousing; freight-forwarding centers; drop-off and loading areas; distribution centers	VOCs, air toxics, including diesel PM, NOx, CO, SOx	No[v]
LIGHT INDUSTRIAL: RESEARCH AND DEVELOPMENT			
▲ Medical waste at research hospitals and labs	Incineration; surgical and medical instruments manufacturers, pharmaceutical manufacturing, biotech research facilities	Air toxics, NOx, CO, SOx	Yes
▲ Electronics, Electrical Apparatus, Components, and Accessories	Computer manufacturer; integrated circuit board manufacturer; semi-conductor production	Air toxics, VOCs	Yes
▲ College or university lab or research center	Medical waste incinerators; lab chemicals handling, storage and disposal	Air toxics, NOx, CO, SOx, PM10	Yes
▲ Research and development labs	Satellite manufacturer; fiber-optics manufacturer; defense contractors; space research and technology; new vehicle and fuel testing labs	Air toxics, VOCs	Yes
▲ Commercial testing labs	Consumer products; chemical handling, storage and disposal	Air toxics, VOCs	Yes

(1) Land Use Classifications – by Activity[i]	(2) Facility or Project Examples	(3) Key Pollutants[ii,iii]	(4) Air Pollution Permits[iv]
INDUSTRIAL: NON-ENERGY-RELATED			
▲ Assembly plants, manufacturing facilities, industrial machinery	Adhesives; chemical; textiles; apparel and furniture upholstery; clay, glass, and stone products production; asphalt materials; wood products; paperboard containers and boxes; metal plating; metal and canned food product fabrication; auto manufacturing; food processing; printing and publishing; drug, vitamins, and pharmaceuticals; dyes; paints; pesticides; photographic chemicals; polish and wax; consumer products; metal and mineral smelters and foundries; fiberboard; floor tile and cover; wood and metal furniture and fixtures; leather and leather products; general industrial and metalworking machinery; musical instruments; office supplies; rubber products and plastics production; saw mills; solvent recycling; shingle and siding; surface coatings	VOCs, air toxics, including diesel PM, NOx, PM, CO, SOx	Yes
INDUSTRIAL: ENERGY AND UTILITIES			
▲ Water and sewer operations	Pumping stations; air vents; treatment	VOCs, air toxics, NOx, CO, SOx, PM10	Yes
▲ Power generation and distribution	Power plant boilers and heaters; portable diesel engines; gas turbine engines	NOx, diesel PM, NOx, CO, SOx, PM10, VOCs	Yes
▲ Refinery operations	Refinery boilers and heaters; coke cracking units; valves and flanges; flares	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Yes
▲ Oil and gas extraction	Oil recovery systems; uncovered wells	NOx, diesel PM, VOCs, CO, SOx, PM10	Yes
▲ Gasoline storage, transmission, and marketing	Above and below ground storage tanks; floating roof tanks; tank farms; gas stations; pipelines	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Yes
▲ Solid and hazardous waste treatment, storage, and disposal activities.	Landfills; methane digester systems	VOCs, air toxics, NOx, CO, SOx, PM10	Yes
CONSTRUCTION (NON-TRANSPORTATION)			
	Building construction; demolition sites	PM (re-entrained road dust), asbestos, diesel PM, NOx, CO, SOx, PM10, VOCs	Limited; State and federal off-road equipment standards

(1) Land Use Classifications – by Activity[i]	(2) Facility or Project Examples	(3) Key Pollutants[ii,iii]	(4) Air Pollution Permits[iv]
DEFENSE			
	Ordnance and explosives demolition; range and testing activities; chemical production; degreasing; surface coatings; vehicle refueling; vehicle and engine operations and maintenance	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Limited; prescribed burning; equipment and solvent rules
TRANSPORTATION			
▲ Vehicular movement	Residential area circulation systems; parking and idling at parking structures; drive-through establishments; car washes; special events; schools; shopping malls, etc.	VOCs, NOx, PM (re-entrained road dust) air toxics e.g., benzene, diesel PM, formaldehyde, acetaldehyde, 1,3 butadiene, CO, SOx, PM10	No
▲ Road construction and surfacing	Street paving and repair; new highway construction and expansion	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	No
▲ Trains	Railroads; switch yards; maintenance yards	VOCs, NOx, CO, SOx, PM10, air toxics, including diesel PM	Limited; Applicable State and federal MV standards, and possible equipment rules
▲ Marine and port activities	Recreational sailing; commercial marine operations; hotelling operations; loading and un-loading; servicing; shipping operations; port or marina expansion; truck idling		
▲ Aircraft	Takeoff, landing, and taxiing; aircraft maintenance; ground support activities		
▲ Mass transit and school buses	Bus repair and maintenance		
NATURAL RESOURCES			
▲ Farming operations	Agricultural burning; diesel operated engines and heaters; small food processors; pesticide application; agricultural off-road equipment	Diesel PM, VOCs, NOx, PM10, CO, SOx	Limited[vi]; Agricultural burning requirements, applicable State and federal mobile source standards; pesticide rules
▲ Livestock and dairy operations	Dairies and feed lots	Ammonia, VOCs, PM10	Yes[7]
▲ Logging	Off-road equipment e.g., diesel fueled chippers, brush hackers, etc.	Diesel PM, NOx, CO, SOx, PM10, VOCs	Limited; Applicable State/federal mobile source standards
▲ Mining operations	Quarrying or stone cutting; mining; drilling or dredging	PM10, CO, SOx, VOCs, NOx, and asbestos in some geographical areas	Applicable equipment rules and dust controls

(1) Land Use Classifications – by Activity[i]	(2) Facility or Project Examples	(3) Key Pollutants[ii,iii]	(4) Air Pollution Permits[iv]
RESIDENTIAL			
Housing	Housing developments; retirement developments; affordable housing; woodburning fireplaces; water heaters	Fireplace emissions (PM10, NOx, VOCs, CO, air toxics); Water heater combustion (NOx, VOCs, CO)	No[vii]
ACADEMIC AND INSTITUTIONAL			
▲ Schools, including school-related recreational activities	Schools; school yards; vocational training labs/classrooms such as auto repair/painting and aviation mechanics	Air toxics	Yes/No[viii]
▲ Medical waste	Incineration	Air toxics, NOx, CO, PM10	Yes
▲ Clinics, hospitals, convalescent homes		Air toxics	Yes

[i] These classifications were adapted from the American Planning Association's "Land Based Classification Standards." The Standards provide a consistent model for classifying land uses based on their characteristics. The model classifies land uses by refining traditional categories into multiple dimensions, such as activities, functions, building types, site development character, and ownership constraints. Each dimension has its own set of categories and subcategories. These multiple dimensions allow users to have precise control over land-use classifications. For more information, the reader should refer to the Association's website at http://www.planning.org/LBCS/GeneralInfo/

[ii] This column includes key criteria pollutants and air toxic contaminants that are most typically associated with the identified source categories.

Additional information on specific air toxics that are attributed to facility categories can be found in ARB's Emission Inventory Criteria and Guidelines Report for the Air Toxics Hot Spots Program (May 15, 1997). This information can be viewed at ARB's web site at http://www.arb.ca.gov/ab2588/final96/guide96.pdf.

Criteria air pollutants are those air pollutants for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Criteria pollutants include ozone (formed by the reaction of volatile organic compounds and nitrogen oxides in the presence of sunlight), particulate matter, nitrogen dioxide, sulfur dioxide, carbon monoxide, and lead.

Volatile organic compounds (VOCs) combine with nitrogen oxides to form ozone, as well as particulate matter. VOC emissions result primarily from incomplete fuel combustion and the evaporation of chemical solvents and fuels. On-road mobile sources are the largest contributors to statewide VOC emissions. Stationary sources of VOC emissions include processes that use solvents (such as dry-cleaning, degreasing, and coating operations and petroleum-related processes (such as petroleum refining, gasoline marketing and dispensing, and oil and gas extraction). Areawide VOC sources include consumer products, pesticides, aerosols and paints, asphalt paving and roofing, and other evaporative emissions.

Nitrogen oxides (NOx) are a group of gaseous compounds of nitrogen and oxygen, many of which contribute to the formation of ozone and particulate matter. Most NOx emissions are produced by the combustion of fuels. Mobile sources make up about 80 percent of the total statewide NOx emissions. Mobile sources include on-road vehicles and trucks, aircraft, trains, ships, recreational boats, industrial and construction equipment, farm

equipment, off-road recreational vehicles, and other equipment. Stationary sources of NOx include both internal and external combustion processes in industries such as manufacturing, food processing, electric utilities, and petroleum refining. Areawide source, which include residential fuel combustion, waste burning, and fires, contribute only a small portion of the total statewide NOx emissions, but depending on the community, may contribute to a cumulative air pollution impact.

Particulate matter (PM) refers to particles small enough to be breathed into the lungs (under 10 microns in size). It is not a single substance, but a mixture of a number of highly diverse types of particles and liquid droplets. It can be formed directly, primarily as dust from vehicle travel on paved and unpaved roads, agricultural operations, and construction and demolition.

Carbon monoxide (CO) is a colorless and odorless gas that is directly emitted as a by-product of combustion. The highest concentrations are generally associated with cold stagnant weather conditions that occur during winter. CO problems tend to be localized.

An Air Toxic Contaminant (air toxic) is defined as an air pollutant that may cause or contribute to an increase in mortality or in serous illness, or which may pose a present or potential hazard to human health. Similar to criteria pollutants, air toxics are emitted from stationary, areawide, and mobile sources. They contribute to elevated regional and localized risks near industrial and commercial facilities and busy roadways. The ten compounds that pose the greatest statewide risk are: acetaldehyde; benzene; 1,3-butadiene; carbon tetrachloride; diesel particulate matter (diesel PM); formaldehyde; hexavalent chromium; methylene chloride; para-dichlorobenzene; and perchloroethylene. The risk from diesel PM is by far the largest, representing about 70 percent of the known statewide cancer risk from outdoor air toxics. The exhaust from diesel-fueled engines is a complex mixture of gases, vapors, and particles, many of which are known human carcinogens. Diesel PM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute about 26 percent of statewide diesel PM emissions, with an additional 72 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and other equipment. Stationary engines in shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations contribute about two percent of statewide emissions. However, when this number is disaggregated to a sub-regional scale such as neighborhoods, the risk factor can be far greater.

[iii] The level of pollution emitted is a major determinant of the significance of the impact.

[iv] Indicates whether facilities activities listed in column 4 are generally subject to local air district permits to operate. This does not include regulated products such as solvents and degreasers that may be used by sources that may not require an operating permit per se, e.g., a gas station or dry cleaner.

[v] Generally speaking, warehousing or distribution centers are not subject to local air district permits. However, depending on the district, motor vehicle fleet rules may apply to trucks or off-road vehicles operated and maintained by the facility operator. Additionally, emergency generators or internal combustion engines operated on the site may require an operating permit.

[vi] Authorized by recent legislation SB700.

[vii] Local air districts do not permit woodburning fireplaces inside private homes. However, some local air districts and land use agencies do have rules or ordinances that require new housing developments or home re-sales to install U.S. EPA –certified stoves. Some local air districts also ban residential woodburning during weather inversions that concentrate smoke in residential areas. Likewise, home water heaters are not permitted; however, new heaters could be subject to emission limits that are imposed by federal or local agency regulations.

[viii] Technical training schools that conduct activities normally permitted by a local air district could be subject to an air permit.

APPENDIX B

QUESTIONS TO CONSIDER WHEN REVIEWING NEW PROJECTS

The questions contained in this appendix suggest a two-part process for evaluating projects within the land use decision-making process.

B-1 suggests project related questions designed to help identify localized project impacts, particularly incompatible land uses.

B-2 focuses on the issue of potential cumulative impacts by including questions about existing emissions and air quality in the community.

The questions address potential public concerns and as well as environmental and public health factors. Answers to these questions are intended to provide the decision-maker with a better understanding of the community and its potential for cumulative air pollution impacts to help determine if a new project warrants a more detailed review.

These questions do not imply any particular action should be taken by land use agencies. Rather the questions are intended to improve the assessment process and facilitate informed decision-making.

Building specific air pollution questions into the decision-making process can alert land use agencies that a project may pose a health risk, and promote selection of alternatives or mitigation measures that would reduce that risk.

Section 2 of the Handbook discusses mechanisms that land use agencies can use to avoid or reduce air pollution related health risk associated with new projects.

PART B-1. PROJECT-RELATED QUESTIONS

This section includes project-related questions that, in conjunction with the questions in Part B, can be used to tailor the project evaluation. These questions are designed to help identify localized project impacts, particularly incompatible land uses.

Project-Related Questions

1. Is the proposed project:

    - ▲ A business or commercial license renewal
    - ▲ A new or modified commercial project
    - ▲ A new or modified industrial project
    - ▲ A new or modified public facility project
    - ▲ A new or modified transportation project
    - ▲ A housing or sensitive receptor development

2. Will the proposed project:

    - ▲ Conform to the zoning designation?
    - ▲ Require a variance to the zoning designation?
    - ▲ Increase its operations over the life of the business such that additional emissions may increase the pollution burden in the community (e.g., from additional truck operations, new industrial operations or process lines, increased hours of operation, build-out to the property line, etc.)?

3. Has the local air district provided comments or information to assist in the analysis?

4. Have public meetings been scheduled with the affected community to solicit their involvement in the decision-making process for the proposed project?

5. If the proposed project is regulated by the local air district:

    - ▲ Has the project received a permit from the local air district?
    - ▲ Does it comply with applicable local air district requirements?
    - ▲ Is the local air district contemplating new regulations that would reduce emissions from the source?
    - ▲ Has a risk assessment been done for the source, and will the source meet air toxics requirements imposed by the local air district?
    - ▲ Is there sufficient new information or public concern to call for a risk assessment or an environmental analysis of the proposed project?
    - ▲ Is the project likely to expand operations over time?

- ▲ Are there land-used based assessment criteria or performance standards that could be applied to this project in addition to applicable air district requirements?

6. If the proposed project is not regulated by the local air district:

   - ▲ Is the local air district informed of the project? When should they be?
   - ▲ Does the local air district believe that there could be potential air pollution impacts associated with this project category?
   - ▲ Are there secondary emissions impacts that could be associated with the project?
   - ▲ Will the proposed project increase or serve as a magnet for diesel traffic?
   - ▲ If the project is a sensitive receptor, does the local air district believe that the project's proximity to nearby sources could pose potential air pollution impacts to people served by the project?
   - ▲ Is there sufficient new information or public concern to call for a risk assessment or an environmental analysis of the proposed project?
   - ▲ Does the site approval process allow identification and mitigation of potential direct or secondary emissions associated with the potential project?
   - ▲ Are there land-used based assessment criteria or performance standards that could be applied to this project in addition to applicable air district requirements?

7. Does the local air district or land use agency have pertinent information on the source?

   - ▲ Available permit and enforcement data, including for the owner or operator of the proposed source that may have other sources in the State.
   - ▲ The proximity of the proposed project to sensitive individuals.
   - ▲ Potential for the proposed project to expose a sensitive individual to odor or other air pollution nuisances.
   - ▲ Meteorology or the prevailing wind patterns between the proposed project and the nearest receptor, or between the proposed sensitive receptor project and sources that could pose a localized or cumulative air pollution impact.
   - ▲ Number of potentially exposed individuals from the proposed project.

8. Based upon collected data, could the proposed project:

   - ▲ Be a polluting source that is located in proximity, or otherwise upwind, of a residential or sensitive receptor location?
   - ▲ Attract sensitive individuals and be located in proximity to, or otherwise downwind, of a source or multiple sources of pollution, including

facilities or transportation-related sources that contribute emissions either directly or indirectly?
- ▲ Result in health risk to the surrounding community?

9. If a CEQA categorical exemption is proposed, was the following considered? (See CEQA Guidelines, Section 15300, and Public Resources Code, Section 21084.)

    - ▲ Is the project site is environmentally sensitive as defined by the project's location? (A project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant.)
    - ▲ Would the project and successive projects of the same type in the same place result in cumulative impacts?
    - ▲ Are there "unusual circumstances" creating the reasonable possibility of significant effects?

PART B-2. QUESTIONS RELATED TO CUMULATIVE IMPACT ASSESSMENT

Land use agencies should consider the questions below to provide the decision-maker with a better understanding of the community and the potential for cumulative air pollution impacts. Answers to these questions will help to determine if proposed new projects or activities warrant a more detailed review. It may also help to see potential environmental concerns from the perspective of the affected community. Additionally, an analysis of the responses will provide local decision-makers with information with which to assess the best policy options for addressing neighborhood-scale air pollution concerns.

These questions can be used to identify whether existing tools and procedures are adequate to address community-specific air pollution issues that can affect or be affected by land use decisions. This process can also be used to pinpoint what land use and air quality characteristics of the community may have the greatest impact on community-level emissions, exposure, and risk. Such elements can include the compliance record of existing sources including those owned or operated by the project proponent, density of sources, proximity to sensitive individuals, transportation circulation in proximity to the proposed project, compatibility with the General Plan and General Plan Elements, etc.

The local air district can provide useful assistance in the collection and evaluation of air quality-related information for some of the questions and should be consulted early in the process.

Technical Questions

1. Is the community home to heavy industrial or numerous light industrial facilities?

2. Do one or more major freeways or high-traffic volume surface streets cut through the community?

3. Are any portions of the community classified for mixed-use zoning?

4. Is there an available list of air pollution sources in the community?

5. Has a walk-through of the community been conducted to corroborate available information on land use activities in the area (e.g., businesses, housing developments, sensitive individuals, etc.)?

6. Has a walk-through of the community been conducted to determine the proximity of existing and anticipated future projects to residential areas or sensitive individuals?

7. Has a walk-through of the affected community been conducted to determine the concentration of emission sources (including anticipated future projects) to residential areas or sensitive individuals?

8. Has the local air district been contacted to obtain information on sources in the community?

9. Do local industries, commercial establishments, or indirect sources such as distribution centers or warehouses, emit air toxics or criteria air pollutants?

10. What air quality monitoring data is available?

11. Have any risk assessments been performed on emission sources in the area?

12. Does the land use agency have the capability of applying a GIS spatial mapping tool that can overlay zoning, sub-development information, and other neighborhood characteristics, with air pollution and transportation data?

13. Based on available information, is it possible to determine if the community or neighborhood experiences elevated health risk due to a concentration of air pollution sources in close proximity? If not, can the necessary information be obtained?

Community-Based Questions

1. Is there a history of chronic complaints about air quality in the community?

2. Is the affected community included in the public participation process for the agency's decision?

3. Have community leaders or citizen groups been contacted about any pre-existing or chronic community air quality concerns?

ARB AND LOCAL AIR DISTRICT INFORMATION AND TOOLS CONCERNING CUMULATIVE AIR POLLUTION IMPACTS

It is the ARB's policy to support research and data collection activities toward the goal of reducing cumulative air pollution impacts. These efforts include updating and improving the air toxics emissions inventory, performing special air monitoring studies in specific communities, and conducting a more complete assessment of non-cancer health effects associated with air toxics and criteria pollutants.[13] This information is important because it helps us better understand links between air pollution and the health of some of our most vulnerable groups -- the young and the elderly.

ARB is working with CAPCOA and OEHHA to improve air pollutant data and evaluation tools to determine when and where cumulative air pollution impacts may be a problem. The following provides additional information on this effort.

How are emissions assessed?

Detailed information about the sources of air pollution in an area is collected and maintained by local air districts and the ARB in what is called an emission inventory. Emission inventories contain information about the nature of the business, the location, type and amount of air pollution emitted, the air pollution-producing processes, the type of air pollution control equipment, operating hours, and seasonal variations in activity. Local districts collect emission inventory data for most stationary source categories.

Local air districts collect air pollution emission information directly from facilities and businesses that are required to obtain an air pollution operating permit. Local air districts use this information to compile an emission inventory for areas within their jurisdiction. The ARB compiles a statewide emission inventory based on the information collected by the ARB and local air districts. Local air districts provide most of the stationary source emission data, and ARB provides mobile source emissions as well as some areawide emission sources such as consumer products and paints. ARB is also developing map-based tools that will display information on air pollution sources.

Criteria pollutant data have been collected since the early 1970's, and toxic pollutant inventories began to be developed in the mid-1980's.

[13] A criteria pollutant is any air pollutant for which EPA has established a National Ambient Air Quality Standard or for which California has established a State Ambient Air Quality Standard, including: carbon monoxide, lead, nitrogen oxides, ozone, particulates and sulfur oxides. Criteria pollutants are measured in each of California's air basins to determine whether the area meets or does not meet specific federal or State air quality standards. Air toxics or air toxic contaminants are listed pollutants recognized by California or EPA as posing a potential risk to health.

How is the toxic emission inventory developed?

Emissions data for toxic air pollutants is a high priority for communities because of concerns about potential health effects. Most of ARB's air toxics data is collected through the toxic "hotspots" program. Local air districts collect emissions data from industrial and commercial facilities. Facilities that exceed health-based thresholds are required to report their air toxics emissions as part of the Toxic Hot Spots program and update their emissions data every four years. Facilities are required to report their air toxics emissions data if there is an increase that would trigger the reporting threshold of the hotspots program. Air toxics emissions from motor vehicles and consumer products are estimated by the ARB. These estimates are generally regional in nature, reflecting traffic and population.

The ARB also maintains chemical speciation profiles that can be used to estimate toxics emissions when no toxic emissions data is available.

What additional toxic emissions information is needed?

In order to assess cumulative air pollution impacts, updated information from individual facilities is needed. Even for sources where emissions data are available, additional information such as the location of emissions release points is often needed to better model cumulative impacts. In terms of motor vehicles, emissions data are currently based on traffic models that only contain major roads and freeways. Local traffic data are needed so that traffic emissions can be more accurately assigned to specific streets and roads. Local information is also needed for off-road emission sources, such as ships, trains, and construction equipment. In addition, hourly maximum emissions data are needed for assessing acute air pollution impacts.

What work is underway?

ARB is working with CAPCOA to improve toxic emissions data, developing a community health air pollution information system to improve access to emission information, conducting neighborhood assessment studies to better understand toxic emission sources, and conducting surveys of sources of toxic pollutants.

How is air pollution monitored?

While emissions data identify how much air pollution is going into the air, the State's air quality monitoring network measures air pollutant levels in outdoor air. The statewide air monitoring network is primarily designed to measure regional exposure to air pollutants, and consists of more than 250 air monitoring sites.

The air toxics monitoring network consists of twenty permanent sites. These sites are supplemented by special monitoring studies conducted by ARB and local air districts. These sites measure upwards of sixty toxic air pollutants. Diesel PM, which is the major driver of urban air toxic risk, is not monitored directly. Ten of

the sixty toxic pollutants, not including diesel, account for most of the remaining air pollution cancer risk in California urban areas.

What additional monitoring has been done?

Recently, additional monitoring has been done to look at air quality at the community level. ARB's community monitoring was conducted in six communities located throughout the State. Most sites were in low-income, minority communities located near major sources of air pollution, such as refineries or freeways. The monitoring took place for a year or more in each community, and included measurements of both criteria and toxic pollutants.

What is being learned from community monitoring?

In some cases, the ARB or local air districts have performed air quality monitoring or modeling studies covering a particular region of the State. When available, these studies can give information about regional air pollution exposures.

The preliminary results of ARB's community monitoring are providing insights into air pollution at the community level. Urban background levels are a major contributor to the overall risk from air toxics in urban areas, and this urban background tends to mask the differences between communities. When localized elevated air pollutant levels were measured, they were usually associated with local ground-level sources of toxic pollutants. The most common source of this type was busy streets and freeways. The impact these ground-level sources had on local air quality decreased rapidly with distance from the source. Pollutant levels usually returned to urban background levels within a few hundred meters of the source.

These results indicate that tools to assess cumulative impacts must be able to account for both localized, near-source impacts, as well as regional background air pollution. The tools that ARB is developing for this purpose are air quality models.

How can air quality modeling be used?

While air monitoring can directly measure cumulative exposure to air pollution, it is limited because all locations cannot be monitored. To address this, air quality modeling provides the capability to estimate exposure when air monitoring is not feasible. Air quality modeling can be refined to assess local exposure, identify locations of potential hot spots, and identify the relative contribution of emission sources to exposure at specific locations. The ARB has used this type of information to develop regional cumulative risk maps that estimate the cumulative cancer air pollution risk for most of California. While these maps only show one air pollution-related health outcome, it does provide a useful starting point.

What is needed for community modeling?

Air quality models have been developed to assess near-source impacts, but they have very exacting data requirements. These near-source models estimate the impact of local sources, but do not routinely include the contribution from regional air pollution background. To estimate cumulative air pollution exposure at a neighborhood scale, a modeling approach needs to combine features of both micro-scale and regional models.

In addition, improved methods are needed to assess near-source impacts under light and variable wind conditions, when high local concentrations are more likely to occur. A method for modeling long-term exposure to air pollutants near freeways and other high traffic areas is also needed.

What modeling work has ARB developed?

A key component of ARB's Community Health Program is the Neighborhood Assessment Program (NAP). As described later in this section, the NAP studies are being conducted to better understand pollution impacts at the community level. Through two such studies conducted in Barrio Logan and Wilmington, ARB is refining community-level modeling methodologies. Regional air toxics toxic modeling is also being performed to better understand regional air pollution background levels.

In a parallel effort, ARB is developing modeling protocols for estimating cumulative emissions, exposure, and risk from air pollution. The protocols will cover modeling approaches, procedures for running the models, the development of statewide risk maps, and methods for estimating health risks. The protocols were subject to an extensive peer review process prior to release.

How are air pollution impacts on community health assessed?

On a statewide basis, ARB's toxic air contaminant program identifies and reduces public exposure to air toxics. The focus of the program has been on reducing cancer risk, because monitoring results show urban cancer risk levels are too high. ARB has also looked for potential non-cancer risks based on health reference levels provided by OEHHA. On a regional basis, the pollutants measured in ARB's toxic monitoring network are generally below the OEHHA non-cancer reference exposure levels.

As part of its community health program, the ARB is taking another look to see if there may be localized exposures of concern from the standpoint of non-cancer health effects. This could include chronic or acute health effects. If the assessment work shows elevated exposures on a localized basis, ARB will work with OEHHA to assess the health impacts.

What tools has ARB developed to assess cumulative air pollution impacts?

ARB has developed the following tools and reports to assist land use agencies and local air districts assess and reduce cumulative emissions, exposure, and risk on a neighborhood scale.

Statewide Risk Maps

ARB has produced regional risk maps that show the statewide trends for Southern and Central California in estimated inhalable cancer risk from air toxics between 1990 and 2010.[14] These maps were developed using the EPA's ASPEN model and are available on the ARB's Internet site. These maps are best used to obtain an estimate of the regional background air pollution health risk and are not detailed enough to estimate the exact risk at a specific location.

ARB also has maps that focus in more detail on smaller areas that fall within the Southern and Central California regions for these same modeled years. The finest visual resolution available in the maps on this web site is 2 kilometers by 2 kilometers. These maps are not detailed enough to assess individual neighborhoods or facilities.

Community Health Air Pollution Information System (CHAPIS)

CHAPIS is an internet-based procedure for displaying information on emissions from sources of air pollution in an easy to use mapping format. CHAPIS uses Geographical Information System (GIS) software to deliver interactive maps over the Internet. CHAPIS relies on emission estimates reported to the ARB's emission inventory database – California Emissions Inventory Development and Reporting System, or CEIDARS.

Through CHAPIS, land use planners and air district staff can quickly and easily identify pollutant sources and emissions within a specified area. CHAPIS contains information on air pollution emissions from selected large facilities and small businesses that emit criteria and toxic air pollutants. It also contains information on air pollution emissions from motor vehicle and areawide emissions. CHAPIS does not contain information on every source of air pollution or every air pollutant. It is a major long-term objective of CHAPIS to include all of the largest air pollution sources and those with the highest documented air pollution risk. CHAPIS will be updated on a periodic basis and additional facilities will be added to CHAPIS as more data becomes available.

CHAPIS is being developed in stages to assure data quality. The initial release of CHAPIS will include facilities emitting 10 or more tons per year of nitrogen oxides, sulfur dioxide, carbon monoxide, PM10, or reactive organic gases; air toxics from

[14] ARB maintains State trends and local cancer risk maps that show statewide trends in estimated inhalable cancer risk from air toxics between 1990 and 2010. This information can be viewed at ARB's web site at http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm)

refineries and power plants of 50 megawatts or more; and facilities that conducted health risk assessments under the California "Hot Spots" program[15] for specific source categories.

CHAPIS can be used by land use agencies to identify the contribution from mobile, area, and point sources on the air quality of that community.

"Hot Spots" Analysis and Reporting Program (HARP)

HARP[16] is a software package available from the ARB. It models emissions and releases data from one or more facilities to estimate the potential health risk posed by the selected facilities on the neighboring community. HARP uses the latest risk assessment guidelines published by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA).

With HARP, a user can perform the following tasks:

- Create and manage facility databases;
- Perform air dispersion modeling;
- Conduct health risk analyses;
- Output data reports; and
- Output results to GIS mapping software.

HARP can model downwind concentrations of air toxics based on the calculated emissions dispersion at a single facility. HARP also has the capability of assessing the risk from multiple facilities, and for multiple locations of concern near those facilities. HARP can also evaluate multi-pathway, non-inhalation health risk resulting from air pollution exposure, including skin and soil exposure, and ingestion of meat and vegetables contaminated with air toxics, and other toxics that have accumulated in a mother's breast milk.

Neighborhood Assessment Program (NAP)

The NAP is a key component of ARB's Community Health Program. It includes the development of tools that can be used to perform assessments of cumulative air pollution impacts on a neighborhood scale. The NAP studies are being conducted to better understand how air pollution affects individuals at the neighborhood level. Thus far, ARB has conducted neighborhood scale assessments in Barrio Logan and Wilmington.

As part of these studies, ARB is collecting data and developing a modeling protocol that can be used to conduct cumulative air pollution impact assessments. Initially these assessments will focus on cumulative inhalation cancer health risk

[15] "Hot Spots" program will be defined in the glossary.
[16] More detailed information can be found on ARB's website at: http://www.arb.ca.gov/toxics/harp/harp.htm

and chronic non-cancer impacts. The major challenge is developing modeling methods that can combine both regional and localized air pollution impacts, and identifying the critical data necessary to support these models. The objective is to develop methods and tools from these studies that can ultimately be applied to other areas of the State. In addition, the ARB plans to use these methods to replace the ASPEN regional risk maps currently posted on the ARB Internet site.

Urban Emissions Model (URBEMIS) is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, office buildings, and construction projects. URBEMIS uses emission factors available from the ARB to estimate vehicle emissions associated with new land uses. URBEMIS 2001 estimates sulfur dioxide emissions from motor vehicles in addition to reactive organic gases, nitrogen oxides, carbon monoxide, and PM10.

Land-Use Air Quality Linkage Report[17]

This report summarizes data currently available on the relationships between land use, transportation and air quality. It also highlights strategies that can help to reduce the use of the private automobile. It also briefly summarizes two ARB-funded research projects. The first project analyzes the travel patterns of residents living in 5 higher density, mixed use neighborhoods in California, and compares them to travel in more auto-oriented areas. The second study correlates the relationship between travel behavior and community characteristics, such as density, mixed land uses, transit service, and accessibility for pedestrians.

[17]To access this report, please refer to ARB's website or click on: http://www.arb.ca.gov/ch/programs/link97.pdf

LAND USE AND AIR QUALITY AGENCY ROLES IN THE LAND USE PROCESS

A wide variety of federal, State, and local government agencies are responsible for regulatory, planning, and siting decisions that can have an impact on air pollution. They include local land use agencies, regional councils of government, school districts, local air districts, ARB, the California Department of Transportation (Caltrans), and the Governor's Office of Planning and Research (OPR) to name a few. This Section will focus on the roles and responsibilities of local and State agencies. The role of school districts will be discussed in Appendix E.

Local Land Use Agencies

Under the State Constitution, land use agencies have the primary authority to plan and control land use.[18] Each of California's incorporated cities and counties are required to adopt a comprehensive, long-term General Plan.[19]

The General Plan's long-term goals are into action through zoning ordinances. These are local laws adopted by counties and cities that describe for specific areas the kinds of development that will be allowed within their boundaries.

Land use agencies are also the lead for doing environmental assessments under CEQA for new projects that may pose a significant environmental impact, or for new or revised General Plans.

Councils of Government (COG)

COGs are organizations composed of local counties and cities that serve as a focus for the development of sound regional planning, including plans for transportation, growth management, hazardous waste management, and air quality. They can also function as the metropolitan planning organization for coordinating the region's transportation programs.

Local Air Districts

Under State law, air pollution control districts or air quality management districts (local air districts) are the local government agencies responsible for improving air quality and are generally the first point of contact for resolving local air pollution issues or complaints. There are 35 local air districts in California[20] that have authority and primary responsibility for regional clean air planning. Local air districts regulate stationary sources of air pollutants within their jurisdiction

[18] The legal basis for planning and land use regulation is the "police power" of the city or county to protect the public's health, safety and welfare. The California Constitution gives cities and counties the power to make and enforce all local police, sanitary and other ordinances and regulations not in conflict with general laws. State law reference: California Constitution, Article XI §7.
[19] OPR General Plan Guidelines, 2003: http://www.opr.ca.gov/planning/PDFs/General_Plan_Guidelines_2003.pdf
[20] Contact information for local air districts in California is listed in the front of this Handbook.

including but not limited to industrial and commercial facilities, power plants, construction activities, outdoor burning, and other non-mobile sources of air pollution. Some local air districts also regulate public and private motor vehicle fleet operators such as public bus systems, private shuttle and taxi services, and commercial truck depots.

- **Regional Clean Air Plans**

Local air districts are responsible for the development and adoption of clean air plans that protect the public from the harmful effects of air pollution. These plans incorporate strategies that are necessary to attain ambient air quality standards. ARB and local district measures to reduce statewide emissions from mobile sources, consumer products, and industrial sources are also included in these regional air plans.

- **Facility-Specific Considerations**

Permitting. In addition to the planning function, local air districts adopt and enforce regulations, issue permits, and evaluate the potential environmental impacts of projects.

Pollution is regulated through permits and technology-based rules that limit emissions from operating units within a facility or set standards that vehicle fleet operators must meet. Permits to construct and permits to operate contain very specific requirements and conditions that tell each regulated source what it must do to limit its air pollution in compliance with local air district rules, regulations, and State law. Prior to receiving a permit, new facilities must go through a New Source Review (NSR) process that establishes air pollution control requirements for the facility. Permit conditions are typically contained in the permit to operate and specify requirements that businesses must follow; these may include limits on the amount of pollution that can be emitted, the type of pollution control equipment that must be installed and maintained, and various record-keeping requirements.

Local air districts also notify the public about new permit applications for major new facilities, or major modifications to existing facilities that seek to locate within 1000 feet of a school.

Local air districts can also regulate other types of sources to reduce emissions. These include regulations to reduce emissions from the following sources:

- hazardous materials in products used by industry such as paints, solvents, and de-greasers;
- agricultural and residential burning;
- leaking gasoline nozzles at service stations;
- public fleet vehicles such as sanitation trucks and school buses; and
- fugitive or uncontrolled dust at construction sites.

However, while emissions from industrial and commercial sources are typically subject to the permit authority of the local air district, sensitive sites such as a day care center, convalescent home, or playground are not ordinarily subject to an air permit. Local air district permits address the air pollutant emissions of a project but not its location.

Under the State's air toxics program, local air districts regulate air toxic emissions by adopting ARB air toxic control measures, or more stringent district-specific requirements, and by requiring individual facilities to perform a health risk assessment if emissions at the source exceed district-specific health risk thresholds[21], [22] (see the section on ARB programs for a more detailed summary of this program).

One approach by which local air districts regulate air toxics emissions is through the "Hot Spots" program[23] The risk assessments submitted by the facilities under this program are reviewed by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) and approved by the local air district. Risk assessments are available by contacting the local air district.

Enforcement. Local air districts also take enforcement action to ensure compliance with air quality requirements. They enforce air toxic control measures, agricultural and residential burning programs, gasoline vapor control regulations, laws that prohibit air pollution nuisances, visible emission limits, and many other requirements designed to clean the air. Local districts use a variety of enforcement tools to ensure compliance. These include notices of violation, monetary penalties, and abatement orders. Under some circumstances, a permit may be revoked.

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[21] Cal/EPA's Office of Environmental Health Hazard Assessment has published a Guide to Health Risk Assessment for lay people involved in environmental health issues, including policymakers, businesspeople, members of community groups, and others with an interest in the potential health effects of toxic chemicals. To access this information, please refer to http://www.oehha.ca.gov/pdf/HRSguide2001.pdf

[22] Section 44306 of the California Health & Safety Code defines a health risk assessment as a detailed comprehensive analysis that a polluting facility uses to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations, and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure.

[23] AB-2588 (the Air Toxics "Hot Spots" Information and Assessment Act) requires local air districts to prioritize facilities by high, intermediate, and low priority categories to determine which must perform a health risk assessment. Each district is responsible for establishing the prioritization score threshold at which facilities are required to prepare a health risk assessment. In establishing priorities for each facility, local air districts must consider the potency, toxicity, quantity, and volume of hazardous materials released from the facility, the proximity of the facility to potential receptors, and any other factors that the district determines may indicate that the facility may pose a significant risk. All facilities within the highest category must prepare a health risk assessment. In addition, each district may require facilities in the intermediate and low priority categories to also submit a health risk assessment.

Table D-1
Local Sources of Air Pollution, Responsible Agencies, and Associated Regulatory Programs

Source	Examples	Primary Agency	Applicable Regulations
Large Stationary	Refineries, power plants, chemical facilities, certain manufacturing plants	Local air districts	Operating permit rules Toxic Hot Spots Law (AB 2588) Local district rules Air Toxic Control Measures (ATCMs)* New Source Review rules Title V permit rules
Small Stationary	Dry cleaners, auto body shops, welders, chrome plating facilities, service stations, certain manufacturing plants	Local air districts	Operating permit conditions, Toxic Hot Spot Laws (AB 2588) Local district rules ATCMs* New Source Review rules
Mobile (non-fleet)	Cars, trucks, buses	ARB	Emission standards Cleaner-burning fuels (e.g., unleaded gasoline, low-sulfur diesel) Inspection and repair programs (e.g., Smog Check)
Mobile Equipment	Construction equipment	ARB, U.S. EPA	ARB rules U.S. EPA rules
Mobile (fleet)	Truck depots, school buses, taxi services	Local air districts, ARB	Local air district rules ARB urban bus fleet rule
Areawide	Paints and consumer products such as hair spray and spray paint	Local air district, ARB	ARB rules Local air district rules

*ARB adopts ATCMs, but local air districts have the responsibility to implement and enforce these measures or more stringent ones.

- **Environmental Review**

As required by the California Environmental Quality Act (CEQA), local air districts also review and comment on proposed land use plans and development projects that can have a significant effect on the environment or public health.[24]

[24] Section 4 of this Handbook contains more information on the CEQA process.

State Air Resources Board

The ARB is the air pollution control agency at the State level that is responsible for the preparation of air plans required by State and federal law. In this regard, it coordinates the activities of all local air districts to ensure all statutory requirements are met and to reduce air pollution emissions for sources under its jurisdiction.

Motor vehicles are the single largest emissions source category under ARB's jurisdiction as well as the largest overall emissions source statewide. ARB also regulates emissions from other mobile equipment and engines as well as emissions from consumer products such as hair sprays, perfumes, cleaners, and aerosol paints.

Air Toxics Program

Under State law, the ARB has a critical role to play in the identification, prioritization, and control of air toxic emissions. The ARB statewide comprehensive air toxics program was established in the early 1980's. The Toxic Air Contaminant Identification and Control Act (AB 1807) created California's program to reduce exposure to air toxics.[25] The Air Toxics "Hot Spots" Information and Assessment Act (Hot Spots program) supplements the AB 1807 program, by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

Under AB 1807, the ARB is required to use certain criteria to prioritize the identification and control of air toxics. In selecting substances for review, the ARB must consider criteria relating to emissions, exposure, and health risk, as well as persistence in the atmosphere, and ambient concentrations in the community. AB 1807 also requires the ARB to use available information gathered from the Hot Spots program when prioritizing compounds.

The ARB identifies pollutants as toxic air contaminants and adopts statewide air toxic control measures (ATCMs). Once ARB adopts an ATCM, local air districts must implement the measure, or adopt and implement district-specific measures that are at least as stringent as the State standard. Taken in the aggregate, these ARB programs will continue to further reduce emissions, exposure, and health risk statewide.

With regard to the land use decision-making process, ARB, in conjunction with local air districts, plays an advisory role by providing technical information on land use-related air issues.

[25] For a general background on California's air toxics program, the reader should refer to ARB's website at http://www.arb.ca.gov/toxics/tac/appendxb.htm.

Other Agencies

Governor's Office of Planning and Research (OPR)

In addition to serving as the Governor's advisor on land use planning, research, and liaison with local government, OPR develops and implements the State's policy on land use planning and coordinates the State's environmental justice programs. Most recently, OPR updated its General Plan Guidelines to highlight the importance of sustainable development and environmental justice policies in the planning process. OPR also advises project proponents and government agencies on CEQA provisions and operates the State Clearinghouse for environmental and federal grant documents.

Transportation Agencies

Transportation agencies can also influence mobile source-related emissions in the land use decision-making process. Local transportation agencies work with land use agencies to develop a transportation (circulation) element for the General Plan. These local government agencies then work with other transportation-related agencies, such as the Congestion Management Agency (CMA), Metropolitan Planning Organization (MPO), Regional Transportation Planning Agency (RTPA), and Caltrans to develop long and short range transportation plans and projects.

Caltrans is the agency responsible for setting State transportation goals and for State transportation planning, design, construction, operations and maintenance activities. Caltrans is also responsible for delivering California's multibillion-dollar State Transportation Improvement Program, a list of transportation projects that are approved for funding by the California Transportation Commission in a 4-year cycle.

When safety hazards or traffic circulation problems are identified in the existing road system, or when land use changes are proposed such as a new residential subdivision, shopping mall or manufacturing center, Caltrans and/or the local transportation agency ensure the projects meet applicable State, regional, and local goals and objectives.

Caltrans also evaluates transportation-related projects for regional air quality impacts, from the perspective of travel-related emissions as well as road congestion and increases in road capacity (new lanes).

California Energy Commission (CEC)

The CEC is the State's CEQA lead agency for permitting large thermal power plants (50 megawatts or greater). The CEC works closely with local air districts and other federal, State and local agencies to ensure compliance with applicable laws, ordinances, regulations and standards in the permitting, construction, operation and closure of such plants. The CEC uses an open and public review

process that provides communities with outreach and multiple opportunities to participate and be heard. In addition to its comprehensive environmental impact and engineering design assessment process, the CEC also conducts an environmental justice evaluation. This evaluation involves an initial demographic screening to determine if a qualifying minority or low-income population exists in the vicinity of the proposed project. If such a population is present, staff considers possible environmental justice impacts including from associated project emissions in its technical assessments.

Federal Agencies

Federal agencies have permit authority over activities on federal lands and certain resources, which have been the subject of congressional legislation, such as air, water quality, wildlife, and navigable waters. The U.S. Environmental Protection Agency generally oversees implementation of the federal Clean Air Act, and has broad authority for regulating certain activities such as mobile sources, air toxics sources, the disposal of toxic wastes, and the use of pesticides. The responsibility for implementing some federal regulatory programs such as those for air and water quality and toxics is delegated by management to specific state and local agencies. Although federal agencies are not subject to CEQA they must follow their own environmental process established under the National Environmental Policy Act (NEPA).

SPECIAL PROCESSES THAT APPLY TO SCHOOL SITING

The California Education Code and the California Public Resources Code place primary authority for siting public schools with the local school district, which is the 'lead agency' for purposes of CEQA. The California Education Code requires public school districts to notify the local planning agency about siting a proposed new public school or expanding an existing school. The planning agency then reports back to the school district regarding a project's conformity with the adopted General Plan. However, school districts can overrule local zoning and land use designations for schools if they follow specified procedures.[26] In addition, all school districts must evaluate proposed new school sites using site selection standards established in Section 14010 of Title 5 of the California Code of Regulations. Districts seeking state funding for school site acquisition must also obtain site approval from the California Department of Education.

Before making a final decision on a school site acquisition, a school district must comply with CEQA and evaluate the proposed site acquisition/new school project for air emissions and health risks by preparing and certifying an environmental impact report or negative declaration. Both the California Education Code section 17213 and the California Public Resources Code section 21151.8 require school districts to consult with administering agencies and local air districts when preparing the environmental assessment. Such consultation is required to identify both permitted and non-permitted "facilities" that might significantly affect health at the new site. These facilities include, but are not limited to, freeways and other busy traffic corridors, large agricultural operations, and rail yards that are within one-quarter mile of the proposed school site, and that might emit hazardous air emissions, or handle hazardous or acutely hazardous materials, substances, or waste.

As part of the CEQA process and before approving a school site, the school district must make a finding that either it found non of the facilities or significant air pollution sources, or alternatively, if the school district finds that there are such facilities or sources, it must determine either that they pose no significant health risks, or that corrective actions by another governmental entity would be taken so that there would be no actual or potential endangerment to students or school workers.

In addition, if the proposed school site boundary is within 500 feet of the edge of the closest traffic lane of a freeway or traffic corridor that has specified minimum average daily traffic counts, the school district is required to determine through specified risk assessment and air dispersion modeling that neither short-term nor long term exposure poses significant heath risks to pupils.

State law changes effective January 1, 2004 (SB352 by Escutia amending Education Code section 17213 and Public Resources Code section 21151.8) also provides for cases in which the school district cannot make either of those two

findings and cannot find a suitable alternative site. When this occurs, the school district must adopt a statement of over-riding considerations, as part of an environmental impact report, that the project should be approved based on the ultimate balancing of the merits.

Some school districts use a standardized assessment process to determine the environmental impacts of a proposed school site. In the assessment process, school districts can use maps and other available information to evaluate risk, including a local air district's database of permitted source emissions. School districts can also perform field surveys and record searches to identify and calculate emissions from non-permitted sources within one-quarter mile radius of a proposed site. Traffic count data and vehicular emissions data can also be obtained for major roadways and freeways in proximity to the proposed site to model potential emissions impacts to students and school employees. This information is available from the local COG or Caltrans, or local cities and counties for non-State maintained roads.

GENERAL PROCESSES USED BY LAND USE AGENCIES TO ADDRESS AIR POLLUTION IMPACTS

There are several separate but related processes for addressing the air pollution impacts of land use projects. One takes place as part of the planning and zoning function. This consists of preparing and implementing goals and policies contained in county or city General Plans, community or area plans, and specific plans governing land uses such as residential, educational, commercial, industrial, and recreational activities. It also includes recommending locations for thoroughfares, parks and other public improvements.

Land use agencies also have a permitting function that includes performing environmental reviews and mitigation when projects may pose a significant environmental impact. They conduct inspections for zoning permits issued, enforce the zoning regulations and issue violations as necessary, issue zoning certificates of compliance, and check compliance when approving certificates of occupancy.

Planning

■ General Plan[27]

The General Plan is a local government "blueprint" of existing and future anticipated land uses for long-term future development. It is composed of the goals, policies, and general elements upon which land use decisions are based. Because the General Plan is the foundation for all local planning and development, it is an important tool for implementing policies and programs beneficial to air quality. Local governments may choose to adopt a separate air quality element into their General Plan or to integrate air quality-beneficial objectives, policies, and strategies in other elements of the Plan, such as the land use, circulation, conservation, and community design elements.

More information on General Plan elements is contained in Appendix D.

■ Community Plans

Community or area plans are terms for plans that focus on a particular region or community within the overall general plan area. It refines the policies of the general plan as they apply to a smaller geographic area and is implemented by ordinances and other discretionary actions, such as zoning.

[27] In October 2003, OPR revised its General Plan Guidelines. An entire chapter is now devoted to a discussion of how sustainable development and environmental justice goals can be incorporated into the land use planning process. For further information, the reader is encouraged to obtain a copy of OPR's General Plan Guidelines, or refer to their website at: http://www.opr.ca.gov/planning/PDFs/General_Plan_Guidelines_2003.pdf

- **Specific Plan**

A specific plan is a hybrid that can combine policies with development regulations or zoning requirements. It is often used to address the development requirements for a single project such as urban infill or a planned community. As a result, its emphasis is on concrete standards and development criteria.

- **Zoning**

Zoning is the public regulation of the use of land. It involves the adoption of ordinances that divide a community into various districts or zones. For instance, zoning ordinances designate what projects and activities can be sited in particular locations. Each zone designates allowable uses of land within that zone, such as residential, commercial, or industrial. Zoning ordinances can address building development standards, e.g., minimum lot size, maximum building height, minimum building setback, parking, signage, density, and other allowable uses.

Land Use Permitting

In addition to the planning and zoning function, land use agencies issue building and business permits, and evaluate the potential environmental impacts of projects. To be approved, projects must be located in a designated zone and comply with applicable ordinances and zoning requirements.

Even if a project is sited properly in a designated zone, a land use agency may require a new source to mitigate potential localized environmental impacts to the surrounding community below what would be required by the local air district. In this case, the land use agency could condition the permit by limiting or prescribing allowable uses including operating hour restrictions, building standards and codes, property setbacks between the business property and the street or other structures, vehicle idling restrictions, or traffic diversion.

Land use agencies also evaluate the environmental impacts of proposed land use projects or activities. If a project or activity falls under CEQA, the land use agency requires an environmental review before issuing a permit to determine if there is the potential for a significant impact, and if so, to mitigate the impact or possibly deny the project.

- **Land Use Permitting Process**

In California, the authority to regulate land use is delegated to city and county governments. The local land use planning agency is the local government administrative body that typically provides information and coordinates the review of development project applications. Conditional Use Permits (Use Permits) typically fall within a land use agency's discretionary authority and therefore are

subject to CEQA. Use Permits are intended to provide an opportunity to review the location, design, and manner of development of land uses prior to project approval. A traditional purpose of the Use Permit is to enable a municipality to control certain uses that could have detrimental environmental effects on the community.

The process for permitting new discretionary projects is quite elaborate, but can be broken down into five fundamental components:

- Project application
- Environmental assessment
- Consultation
- Public comment
- Public hearing and decision

Project Application

The permit process begins when the land use agency receives a project application, with a detailed project description, and support documentation. During this phase, the agency reviews the submitted application for completeness. When the agency deems the application to be complete, the permit process moves into the environmental review phase.

Environmental Assessment

If the project is discretionary and the application is accepted as complete, the project proposal or activity must undergo an environmental clearance process under CEQA and the CEQA Guidelines adopted by the California Resources Agency.[28] The purpose of the CEQA process is to inform decision-makers and the public of the potential significant environmental impacts of a project or activity, to identify measures to minimize or eliminate those impacts to the point they are no longer significant, and

What is a "Lead Agency"?

A lead agency is the public agency that has the principal responsibility for carrying out or approving a project that is subject to CEQA. In general, the land use agency is the preferred public agency serving as lead agency because it has jurisdiction over general land uses. The lead agency is responsible for determining the appropriate environmental document, as well as its preparation.

What is a "Responsible Agency"?

A responsible agency is a public agency with discretionary approval authority over a portion of a CEQA project (e.g., projects requiring a permit). As a responsible agency, the agency is available to the lead agency and project proponent for early consultation on a project to apprise them of applicable rules and regulations, potential adverse impacts, alternatives, and mitigation measures, and provide guidance as needed on applicable methodologies or other related issues.

What is a "Commenting Agency"?

A commenting agency is any public agency that comments on a CEQA document, but is neither a lead agency nor a responsible agency. For example, a local air district, as the agency with the responsibility for comprehensive air pollution control, could review and comment on an air quality analysis in a CEQA document for a proposed distribution center, even though the project was not subject to a permit or other pollution control requirements.

[28] Projects and activities that may have a significant adverse impact on the environment are evaluated under CEQA guidelines set forth in title 14 of the California Code of Regulations, sections 15000 et seq.

to discuss alternatives that will accomplish the project goals and objectives in a less environmentally harmful manner.

To assist the lead agency in determining whether the project or activity may have a significant effect that would require the preparation of an EIR, the land use agency may consider criteria, or thresholds of significance, to assess the potential impacts of the project, including its air quality impacts. The land use agency must consider any credible evidence in addition to the thresholds, however, in determining whether the project or activity may have a significant effect that would trigger the preparation of an EIR.

The screening criteria to determine significance is based on a variety of factors, including local, State, and federal regulations, administrative practices of other public agencies, and commonly accepted professional standards. However, the final determination of significance for individual projects is the responsibility of the lead agency. In the case of land use projects, the lead agency would be the City Council or County Board of Supervisors.

A new land use plan or project can also trigger an environmental assessment under CEQA if, among other things, it will expose sensitive receptors such as schools, day care centers, hospitals, retirement homes, convalescence facilities, and residences to substantial pollutant concentrations.[29]

CEQA only applies to "discretionary projects." Discretionary means the public agency must exercise judgment and deliberation when deciding to approve or disapprove a particular project or activity, and may append specific conditions to its approval. Examples of discretionary projects include the issuance of a conditional use permit, re-zoning a property, or widening of a public road. Projects that are not subject to the exercise of agency discretion, and can therefore be approved administratively through the application of set standards are referred to as ministerial projects. CEQA does not apply to ministerial projects.[30] Examples of typical ministerial projects include the issuance of most building permits or a business license.

Once a potential environmental impact associated with a project is identified through an environmental assessment, mitigation must be considered. A land use agency should incorporate mitigation measures that are suggested by the local air district as part of the project review process.

[29] Readers interested in learning more about CEQA should contact OPR or visit their website at http://www.opr.ca.gov/.
[30] See California Public Resources Code section 21080(b)(1).

Consultation

Application materials are provided to various departments and agencies that may have an interest in the project (e.g., air pollution, building, police, fire, water agency, Fish and Game, etc.) for consultation and input.

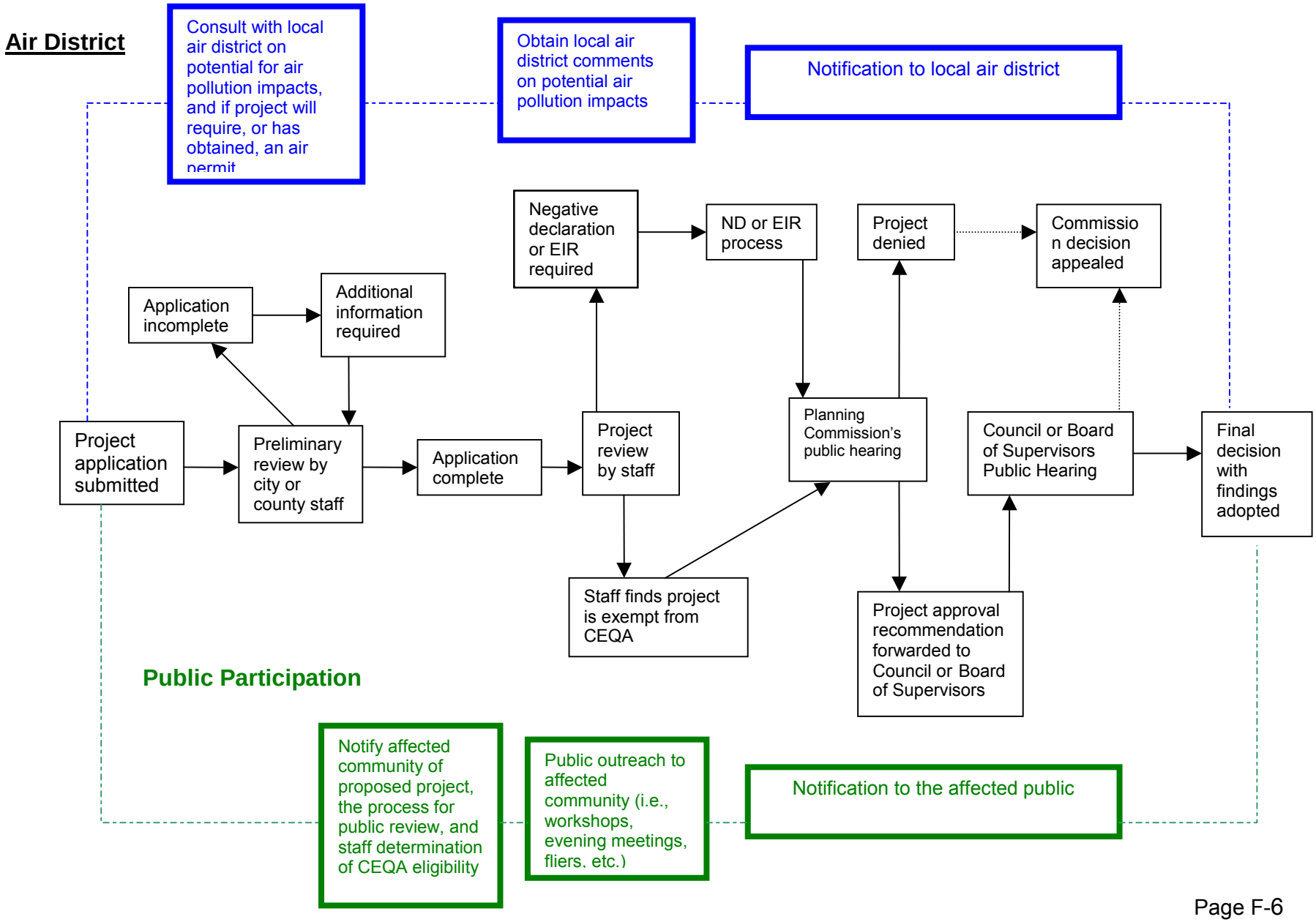
Public Comment

Following the environmental review process, the Planning Commission reviews application along with the staff's report on the project assessment and a public comment period is set and input is solicited.

Public Hearing and Decision

Permit rules vary depending on the particular permit authority in question, but the process generally involves comparing the proposed project with the land use agency standards or policies. The procedure usually leads to a public hearing, which is followed by a written decision by the agency or its designated officer. Typically, a project is approved, denied, or approved subject to specified conditions.

USE PERMIT (DISCRETIONARY ACTION) REVIEW PROCESS*



GLOSSARY OF KEY AIR POLLUTION TERMS

Air Pollution Control Board or Air Quality Management Board: Serves as the governing board for local air districts. It consists of appointed or elected members from the public or private sector. It conducts public hearings to adopt local air pollution regulations.

Air Pollution Control Districts or Air Quality Management Districts (local air district): A county or regional agency with authority to regulate stationary and area sources of air pollution within a given county or region. Governed by a district air pollution control board.

Air Pollution Control Officer (APCO): Head of a local air pollution control or air quality management district.

Air Toxic Control Measures (ATCM): A control measure adopted by the ARB (Health and Safety Code Section 39666 et seq.), which reduces emissions of toxic air contaminants.

Ambient Air Quality Standards: An air quality standard defines the maximum amount of a pollutant that can be present in the outdoor air during a specific time period without harming the public's health. Air quality standards may only be established by the U.S. EPA and the ARB. No other state has this authority. Air quality standards are a measure of clean air. More specifically, an air quality standard establishes the concentration at which a pollutant is known to cause adverse health effects to sensitive groups within the population, such as children and the elderly. Federal standards are referred to as National Ambient Air Quality Standards (NAAQS); State standards are referred to as California ambient air quality standards (CAAQS).

Area-wide Sources: Sources of air pollution that individually emit small amounts of pollution, but together add up to significant quantities of pollution. Examples include consumer products, fireplaces, road dust, and farming operations.

Attainment vs. Nonattainment Area: An attainment area is a geographic area that meets the National Ambient Air Quality Standards for the criteria pollutants and a non-attainment area is a geographic area that doesn't meet the NAAQS for criteria pollutants.

Attainment Plan: Attainment plans lay out measures and strategies to attain one or more air quality standards by a specified date.

California Clean Air Act (CCAA): A California law passed in 1988, which provides the basis for air quality planning and regulation independent of federal

regulations. A major element of the Act is the requirement that local air districts in violation of the CAAQS must prepare attainment plans which identify air quality problems, causes, trends, and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

California Environmental Quality Act (CEQA): A California law that sets forth a process for public agencies to make informed decisions on discretionary project approvals. The process helps decision-makers determine whether any potential, significant, adverse environmental impacts are associated with a proposed project and to identify alternatives and mitigation measures that will eliminate or reduce such adverse impacts.[31]

California Health and Safety Code: A compilation of California laws, including State air pollution laws, enacted by the Legislature to protect the health and safety of people in California. Government agencies adopt regulations to implement specific provisions of the California Health and Safety Code.

Clean Air Act (CAA): The federal Clean Air Act was adopted by the United States Congress and sets forth standards, procedures, and requirements to be implemented by the U.S. Environmental Protection Agency (EPA) to protect air quality in the United States.

Councils of Government (COGs): There are 25 COGs in California made up of city and county elected officials. COGs are regional agencies concerned primarily with transportation planning and housing; they do not directly regulate land use.

Criteria Air Pollutant: An air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Examples include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM10 and PM2.5. The term "criteria air pollutants" derives from the requirement that the U.S. EPA and ARB must describe the characteristics and potential health and welfare effects of these pollutants. The U.S. EPA and ARB periodically review new scientific data and may propose revisions to the standards as a result.

District Hearing Board: Hears local air district permit appeals and issues variances and abatement orders. The local air district board appoints the members of the hearing board.

Emission Inventory: An estimate of the amount of pollutants emitted into the atmosphere from mobile, stationary, area-wide, and natural source categories over a specific period of time such as a day or a year.

Environmental Impact Report (EIR): The public document used by a governmental agency to analyze the significant environmental effects of a

[31] To track the submittal of CEQA documents to the State Clearinghouse within the Office of Planning and Research, the reader can refer to CEQAnet at http://www.ceqanet.ca.gov.

proposed project, to identify alternatives, and to disclose possible ways to reduce or avoid the possible negative environmental impacts.

Environmental Justice: California law defines environmental justice as the fair treatment of people of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (California Government Code Sec.65040.12(c)).

General Plans: A statement of policies developed by local governments, including text and diagrams setting forth objectives, principles, standards, and plan proposals for the future physical development of the city or county.

Hazardous Air Pollutants (HAPs): An air pollutant listed under section 112 (b) of the federal Clean Air Act as particularly hazardous to health. Emission sources of hazardous air pollutants are identified by U.S. EPA, and emission standards are set accordingly. In California, HAPs are referred to as toxic air contaminants.

Major Source: A stationary facility that emits a regulated pollutant in an amount exceeding the threshold level, which is determined by the location of the facility and attainment status of an area.

Mobile Source: Sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats, and airplanes.

National Ambient Air Quality Standard (NAAQS): A limit on the level of an outdoor air pollutant established by the US EPA pursuant to the Clean Air Act. There are two types of NAAQS. Primary standards set limits to protect public health and secondary standards set limits to protect public welfare.

Negative Declaration (ND): When the lead agency (the agency responsible for preparing the EIR or ND) under CEQA, finds that there is no substantial evidence that a project may have a significant environmental effect, the agency will prepare a "negative declaration" instead of an EIR.

New Source Review (NSR): A federal Clean Air Act requirement that state implementation plans must include a permit review process, which applies to the construction and operation of new or modified stationary sources in nonattainment areas. Two major elements of NSR to reduce emissions are best available control technology requirements and emission offsets.

Office of Planning and Research (OPR): OPR is part of the Governor's office. OPR has a variety of functions related to local land-use planning and environmental programs. It provides General Plan Guidelines for city and county planners, and coordinates the state clearinghouse for Environmental Impact Reports.

Ordinance: A law adopted by a city council or County Board of Supervisors. Ordinances usually amend, repeal or supplement the municipal code; provide zoning specifications; or appropriate money for specific purposes.

Overriding Considerations: A ruling made by the lead agency in the CEQA process when the lead agency finds the importance of the project to the community outweighs potential adverse environmental impacts.

Public Comment: An opportunity for the general public to comment on regulations and other proposals made by government agencies. You can submit written or oral comments at the public meeting or send your written comments to the agency.

Public Hearing: A public hearing is an opportunity to testify on a proposed action by a governing board at a public meeting. The public and the media are welcome to attend the hearing and listen to, or participate in, the proceedings.

Public Notice: A public notice identifies the person, business, or local government seeking approval of a specific course of action (such as a regulation). It describes the activity for which approval is being sought, and describes the location where the proposed activity or public meeting will take place.

Public Nuisance: A public nuisance, for the purposes of air pollution regulations, is defined as a discharge from any source whatsoever of such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. (Health and Safety Code section 41700).

Sensitive Individual: Refers to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems). Land uses where sensitive individuals are most likely to reside or play include schools and schoolyards, parks and playgrounds, day care centers, nursing homes, hospitals, and residential communities.

State Implementation Plan (SIP): A plan prepared by state and local agencies and submitted to U.S. EPA describing how each area will attain and maintain national ambient air quality standards. SIPs include the technical information about emission inventories, air quality monitoring, control measures and strategies, and enforcement mechanisms. A SIP is composed of local air quality management plans and State air quality regulations.

Stationary Sources: Non-mobile sources such as power plants, refineries, and manufacturing facilities.

Toxic Air Contaminant (TAC): An air pollutant, identified in regulation by the ARB, which may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. TACs are considered under a different regulatory process (California Health and Safety Code Section 39650 et seq.) than pollutants subject to State Ambient Air Quality Standards. Health effects associated with TACs may occur at extremely low levels. It is often difficult to identify safe levels of exposure, which produce no adverse health effects.

Variance: A variance is issued by a district hearing board to allow a source to continue operating legally while temporarily in violation of regulations.

Workshop: Workshops are meetings designed to inform the public and solicit comments on rules and regulations, plans and policies that are in the early stages of development. They are informal gatherings where the agency staff present preliminary proposals for a regulation, issue control measure, plan, or other project. Staff then asks everyone present for their comments. The discussion is generally informal and open, like having a conversation where points of view are exchanged and discussed.

Zoning ordinances: City councils and county boards of supervisors adopts zoning ordinances that set forth land use classifications, divides the county or city into land use zones as delineated on the official zoning, maps, and set enforceable standards for future development.